



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

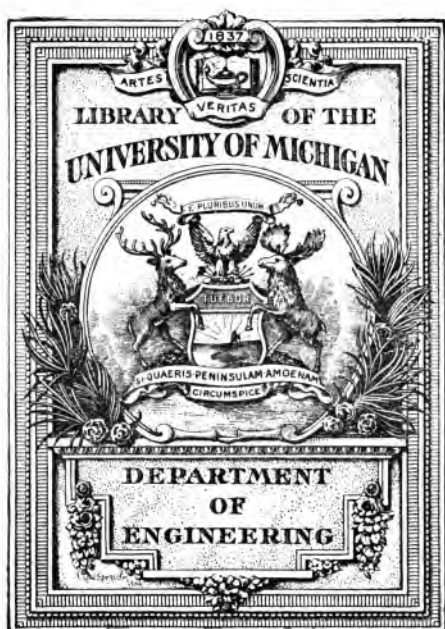
About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>



B

875,741



PRINTED IN 20

REDACTED

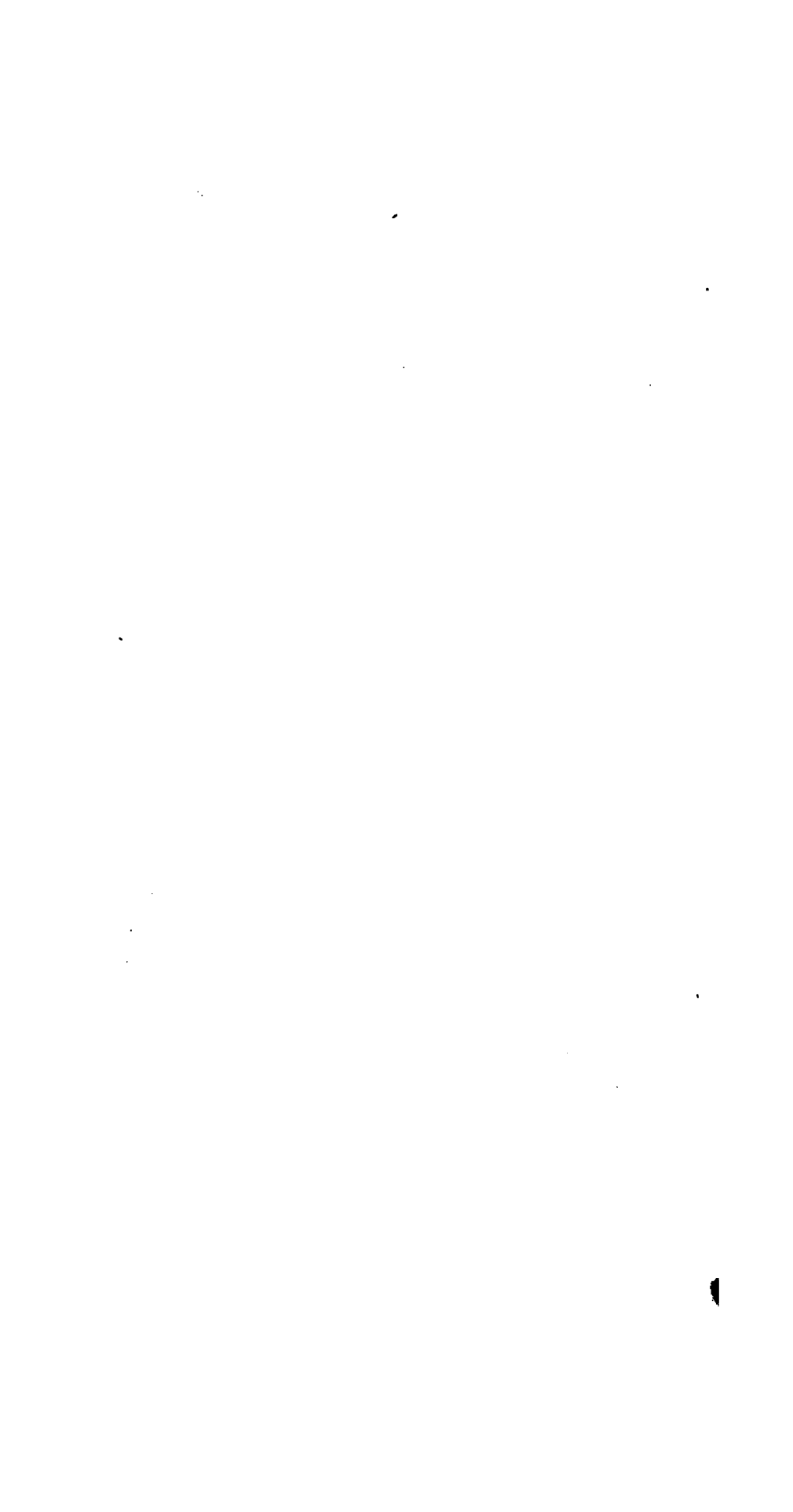
ARY

[REDACTED]

[REDACTED]

Library
PK
1
..L.S.7
Jepke

r



562

I N D E X
TO THE
JOURNAL
OF THE
INSTITUTION OF
ELECTRICAL ENGINEERS
(*Founded 1871; Incorporated 1883.*)

VOLS. **21** TO **30.**—1892–1901.

COMPILED UNDER THE DIRECTION OF, AND EDITED BY,

WALTER G. McMILLAN,
SECRETARY.

London:

E. AND F. N. SPON, LIMITED, 125, STRAND, W.C.

New York:

SPON AND CHAMBERLAIN, 12, CORTLANDT STREET.

Offices of the Institution:

28, VICTORIA STREET, WESTMINSTER, S.W.

1901.

PREFACE.

THE Parts comprised in the Volumes referred to in this Index were numbered and published as follows :—

Vol. **21** comprises Parts 96–102, published in 1892.

" 22	"	"	103–108,	"	"	1893.
" 23	"	"	109–114,	"	"	1894.
" 24	"	"	115–119,	"	"	1895.
" 25	"	"	120–125,	"	"	1896.
" 26	"	"	126–131,	"	"	1897.
" 27	"	"	132–137,	"	"	1898.
" 28	"	"	138–141,	"	"	1899.
" 29	"	"	142–146,	"	"	1899–1900.
" 30	"	"	147–152,	"	"	1900–1901.

The present Index is divided into two parts, of which the first relates to the Transactions of the Institution and of its Local Sections, and to Original Communications published by the Institution; the second to Abstracts of Articles, on Electrical Engineering and Science, which appeared in the pages of other journals. The inclusion of abstracts in this Journal was discontinued in 1898 (Vol. **27**), when the Institution, conjointly with the Physical Society, undertook the issue of *Science Abstracts*, a publication which is printed, indexed, and distributed separately.

In the first portion of this Index, only the principal entry relating to any paper read at a Meeting contains a detailed reference to the speakers taking part in the discussion on the paper. In order to facilitate reference to the discussion, the other entries, in most cases, give the first word of the principal entry in italicised letters enclosed within square brackets.

NOTE:

Copies of the General Index to Volumes 1 to 10, and of that to Volumes 11 to 20, are still obtainable from the Publishers, or from the Secretary, price 2s. 6d. per copy.

INDEX.

*Titles in heavy type denote that the Paper was read at a Meeting of the Institution.
That portion of the Index comprising the Abstracts will be found at the end.*

A.

	VOL.	PAGE
Abney, Sir W. de W. [<i>Discussion</i>], Hissing of the Electric Arc ...	28	440
Absolute Values of Capacity Measurements (<i>J. Elton Young</i>)...	29	941
Accounts, Alteration in Form of Annual Statement...	25	299, 617
——— and Balance Sheet for the 12 months ending Dec. 31, 1891 ...	21	344
———, 1892 ...	22	242
———, 1893 ...	23	360
———, 1894 ...	24	277
———, 1895 ...	25	299, 618
——— 9 months ending Sept. 30, 1896 ...	25	698
——— 12 months ending Sept. 30, 1897 ...	26	730
——— 15 months ending Dec. 31, 1898 ...	28	648
——— 12 months ending Dec. 31, 1899 ...	29	872
——— 1900 ...	30	1226
Accumulator Problems. [<i>See Battery, Storage</i>] ...	29	460
——— Traction on Rails and Ordinary Roads (<i>L. Epstein</i>). [<i>See</i> <i>Traction</i>] ...	26	666
Accumulators, Controlled by Reversible Boosters. [<i>See Batteries</i>] ...	30	1040
Ackerman, E. [<i>Discussion</i>], Experiments on Alternate-Current Arcs by aid of Oscillographs ...	28	468
Acland, Capt. F. E. D. [<i>Discussion</i>], Electrical Time Service ...	29	148
Adams, A. J. S.— [<i>Discussion</i>] Earth Currents in India ...	22	221
„ Magnetic Space Telegraphy ...	27	960
——, G. [<i>Discussion</i>], Dynamos ...	26	577
Addenbrooke, G. L. [<i>Paper</i>], High-Voltage Lamps, and their Influence on Central Station Practice ...	25	195, 290
[<i>Discussion</i>] Alternate-Current Measurement ...	30	918
„ Alternating-Current Induction Motor ...	29	847
„ Apparatus for 200-Volt Circuits ...	27	186
„ Capacity in Alternate-Current Working ...	30	440
„ Cost of Electrical Energy ...	27	410
„ Cost of Steam Raising and of Electrical Energy... ..	29	84
„ Distant Electric Power Transmission ...	29	663
„ Electric Wiring ...	25	119
„ Electrical Power Bills of 1900 ...	30	517
„ Electrolytic Centrifugal Process for Production of Copper Tubes ...	29	281
„ High-Voltage Lamps [<i>Reply</i>] ...	25	290

168530

	VOL.	PAGE
Addenbrooke, G. L. (<i>continued</i>)—		
[<i>Discussion</i>] Insulation on Cables	30	689
„ Propagation of Magnetisation in Iron	24	210
„ Report of Swiss Visit	29	253
„ Reversible Regenerative Armatures and Short Air-Space Dynamos	24	156
„ Standardisation of Electrical Engineering Plant	29	330
„ Storage Battery Problems	29	507
„ Telephone Switch-Board	24	66
„ Utilisation of Schaffhausen Water-Power	29	191
Addison, Col. G. W. [<i>Discussion</i>], Electrically Interlocking Railway Signals	26	125
Address [<i>Inaugural</i>] of the President. [<i>See Inaugural</i>].		
Ætheric Telegraphy (<i>Sir W. H. Preece</i>)	27	869
[For <i>Discussion</i> , see <i>Discussion on Improvements in Magnetic Space Telegraphy under Telegraphy</i> .]		
Africa, South, Electrical Engineers, R.E., in (<i>Lieut.-Col. R. E. Crompton</i>)	30	284
Air-Gap and Interpolar Induction (<i>F. W. Carter</i>)	29	925
—— Induction in Continuous-Current Dynamos (<i>C. C. Hawkins and R. Wightman</i>)	29	436
Airy, Sir George Biddel (Honorary Member), Announcement of the Death of	21	2
Aitken, W. [<i>Discussion</i>], Telephone Switch-Board	24	71
Albright, J. F.—		
[<i>Discussion</i>] Alternate-Current Transformers	21	747
„ Electric Light for Railway Purposes	24	328
„ ——— Lighting of the City of London	23	188
„ Electrical Distribution by the Newcastle-on-Tyne Company	21	493
Alioth Electricity Company, Visit to Works of	29	198
Allen, H. N. [<i>Paper</i>], Sparkless Reversal in Dynamos	27	209
——, Award of Premium to (1898)	28	638
——, R. W. [<i>Discussion</i>], Single-Acting High-Speed Engine	24	507
Allingham, G. C.—		
[<i>Discussion</i>] Electrical Equipment of Ships of War	29	612
„ Storage Battery Problems	29	507
——, Award of Premium to (1894)	23	715
Alternate-Current Arcs, Experiments on, by aid of Oscillographs (<i>W. Duddell and E. W. Marchant</i>). [<i>See Oscillographs</i>]	28	450
—— ——— Motors, Distribution of Power by (<i>Albion T. Snell</i>). [<i>See Power</i>]	22	280
—— ——— Transformers, Experimental Researches on (<i>J. A. Fleming</i>). [<i>See Transformers</i>]	21	594
—— ——— ———, do., do. [<i>continued Discussion</i>]. [<i>See Transformers</i>]	22	2, 78
Alternate Currents, Experimental Investigations of (<i>Alexander Siemens</i>)	21	164
<i>Discussion</i> :—Esson, W. B., 262; Evershed, S., 238; Fleming, J. A., 237; Housman, R. H., 258; Perry, J., 232; Russell, Stuart A., 259; Siemens, Alexander (<i>Explanatory Remarks</i>), 231; (<i>in reply</i>), 264; Swinburne, James, 241.		

	VOL.	PAGE
Alternate-Current Power, Measurement of (<i>J. A. Fleming</i>)	21	602
——— Measurement, Test-Room Methods of (<i>A. Campbell</i>). [See <i>Measurement</i>]	30	889
——— Wattmeter (<i>W. M. Mordey</i>)	30	384
——— Working, Capacity in (<i>W. M. Mordey</i>). [See <i>Capacity</i>]	30	364
Alternating and Continuous Current, Relative Advan- tages of, for a General Supply of Electricity, especially with regard to Interference with other Interests ...	30	3
<i>Discussion</i> :—Arnold, B. J., 5; Ayrton, W. E., 11; Crocker, F. B., 16; Ferranti, S. Z. de, 3; Kennelly, Dr. A. E., 9; Korda, D., 14; Mailloux, C. O., 21; Mordey, W. M., 19; Preece, Sir W. H., 6; Thompson, S. P., 22; Ward-Leonard, H., 25.		
Alternating-Current Induction Motors (<i>A. C. Eborall</i>). [See <i>Motors</i> .]	29	799
Alternating Currents of High Potential and High Frequency, Experiments with (<i>Nikola Tesla</i>)	21	51
Alternating Currents of very High Frequency (<i>W. G. Royal-Dawson</i>)	28	655
———, Resonance with (<i>A. Russell</i>)	30	596
———, Three-phase, Electric Traction by (<i>E. K. Scott</i>) ...	28	108
Alternators, Parallel Running of, Effect of Governors on (<i>L. Wilson</i>)	28	389
———, Working of (<i>W. M. Mordey</i>)	22	442
———, Synchronising of (<i>M. R. Gardner and R. P. Howgrave- Graham</i>)	28	658
Alternators, Testing and Working (<i>W. M. Mordey</i>)	22	116
<i>Discussion</i> :—Ayrton, W. E., 136; Bailey, Frank, 185; Crompton, R. E., 181; Fleming, J. A., 166; Harrison, H. E., 174; Hopkinson, John, 169; Kapp, Gisbert, 171; Miller, Leslie, 134, 188; Mordey, W. M. (in reply), 188; Sumpner, W. E., 183; Swinburne, J., 177; Thompson, S. P., 139, 164; Weekes, R. W., 186.		
Aluminium, Use of, as an Electrical Conductor, with New Observations upon Durability of Aluminium and other Metals under Atmospheric Exposure (<i>J. B. C. Kershaw, F.I.C.</i>)	30	348
<i>Discussion</i> :—Forbes, G., 361; Gavey, J., 359; Gibbings, W., 362; Glazebrook, R. T., 358; Kershaw, J. B. C. (in reply), 362; Ristori, E., 361; Swinburne, J., 360.		
American Engineering Societies, Letter from, offering a Welcome to Members of the Institution visiting the Chicago Exhibition, 1893	21	545
——— Institute of Electrical Engineers, in Reference to Death of Dr. John Hopkinson... ..	27	691
———, Letter from	22	407
———, Joint Meeting with, in Paris	30	1
———, Reception of, in London	30	1220
——— Society of Civil Engineers, Letter from	22	319
Ammeter (Three-) Method of Measuring Alternate-Current Power (<i>J. A. Fleming</i>)	21	620
Amsler, A. [<i>Paper</i>], Utilisation of the Schaffhausen Water-Power ...	29	175
Andersen, F. V. [<i>Discussion</i>], Reversible Regenerative Armatures and Short Air-Space Dynamos	24	144
Anderson, Sir James, Announcement of the Death of	22	876
Anderson, Sir Wm., Obituary Notice of	28	685
Andreoli, Gabriel [<i>Discussion</i>], Problems of Commercial Electrolysis	21	572

	VOL.	PAGE
Andrews, J. D. F.—		
[Discussion] Electric Wiring	25	112
" Wiring Rules... ..	28	206
Andrews, Leonard [Paper], Prevention of Interruptions to Electricity Supply. [See Prevention]	27	487, 519
[Discussion] Capacity in Alternate-Current Working	30	458
" Experiments on Alternate-Current Arcs by aid of Oscillographs	28	450, 455
" Prevention of Interruptions to Electricity Supply [Reply]	27	519
" Standardisation of Electrical Engineering Plant... ..	29	324
—, Award of Premium to (1898)	28	638
Andrews, O. M. [Discussion], Wiring Rules	28	216
Annual General Meeting. [See Annual Report]		
— Report of the Council, 1892, 21, 715, 1893, 22, 571; 1894, 23, 713; 1895, 24, 626; 1896, 25, 682; 1897, 26, 717; 1898–9, 28, 634; 1899–1900, 29, 859; 1900–1, 30, 1211.		
Ansell, W. T. [Discussion], Constitution of the Council	22	578
Antill, B. H. [Discussion], Electric Wiring	25	64
Appleby, F. J. [Discussion], Cost of Steam Raising and of Electrical Energy	29	106
Arc, Direct-Current, as Telephone Receiver and Transmitter (<i>W. Duddell</i>)	30	239
Arc, Direct-Current; Rapid Variations in the Current through (<i>W. Duddell</i>)	30	232
Discussion:—Ayrton, W. E., 267; Clinton, W. C., 278; Duddell, W. (in reply), 278; Fleming, J. A., 271; Marchant, E. W., 275; O'Gorman, M., 274; Russell, A., 276; Trotter, A. P., 272.		
Arc, Direct-Current, Sounds Emitted by (<i>W. Duddell</i>)	30	243
Arc, Electric, Hissing of the (<i>Mrs. Ayrton</i>)	28	400
Discussion:—Abney, Capt. W. de W., 440; Ayrton, W. E., 441; Ayrton, Mrs. (in reply), 445; Cotsworth, H. G., 443; Fleming, J. A., 438; Mordey, W. M., 434; Swan, J. W. (President), 431, 450; Thompson, S. P., 431, 443; Trotter, A. P., 444.		
Arc, Electric, Notes on the Light of (<i>A. P. Trotter</i>)	21	360
Discussion:—Ayrton, W. E. (President), 403; Carter, E. T., 399; Festing, General, 385; Fleming, J. A., 393; Mordey, W. M., 388; Salomons, Sir David, 397; Shoolbred, J. N., 401; Stothert, J. K., 406; Sumpner, W. E., 386; Swinburne, James, 384; Thompson, S. P., 402; Trotter, A. P. (in reply), 407; Weekes, R. W., 397.		
Arc Lamps for 200-Volt Circuits. (See <i>Lamps</i>)	27	131
— Lighting from 250-Volt Supply (<i>W. B. Sayers</i>)	29	382
Arcs, Alternate Current, Experiments on, by Aid of Oscillographs. (<i>W. Duddell</i> and <i>E. W. Marchant</i>). [See <i>Oscillographs</i>]	29	1
Armatures, Reversible Regenerative, and Short Air-Space Dynamos (<i>W. B. Sayers</i>)	24	122
Discussion:—Addenbrooke, G. L., 156; Andersen, F. V., 144; Crompton, R. E. (President), 143, 178; Esson, W. B., 155; Evershed, S., 173; Hawkins, C. C., 158; Mavor, H. A., 148; Mordey, W. M., 146, 183; Parshall, H. F., 152; Preller, Du		

Armatures and Short Air-Space Dynamos (continued)—*Discussion (continued) :—*

Riche, 170, 177 ; Ravenshaw, H., 150 ; Sayers, W. B. (in reply), 179 ; Snell, Albion T., 178 ; Thompson, S. P., 163.		
Armature, Slotted, Reluctance of the Teeth in (<i>W. B. Hird</i>)	29	933
Armstrong, H. E.—		
[<i>Discussion</i>] Cause of Changes of E.M.F. in Secondary Batteries	21	443
" Storage Battery Problems	29	495
—, Colonel, Announcement of the Death of	23	683
Arnold, B. J. [<i>Discussion</i>], Relative Advantages of Alternating- and Continuous-Current Electricity Supply	30	5
Aron, L. [<i>Discussion</i>], Frictionless Motor Meter	29	789
Articles of Association, Alteration of	25	615
—, New, Reference to, by President	27	692
—, Revised	27	969
—, Special General Meetings of Members for Revision of Associate Members, Class of, the President (Professor S. P. Thompson) in Reference to Transfer of Associates to	28	196
Associates, Discussion on Mode of Electing	21	722
Astatic Station Voltmeter, An (<i>W. E. Ayrtton and T. Mather</i>)	23	380
<i>Discussion :—</i> Ayrtton, W. E. (in reply), 388 ; Crompton, R. E., 387 ; Mordey, W. M., 386.		
Atkinson, L. B.—		
[<i>Discussion</i>] Dynamos	26	621
" Wiring Rules	28	203
—, W. M. [<i>Discussion</i>], Use of Electricity in Coal Mines	30	861
Atmospheric Action upon Aluminium and other Metals (<i>J. B. C. Kershaw</i>)... ..	30	348
Aylmer, John, Announcement of the Death of	26	35
Ayrtton, Mrs. H. [<i>Paper</i>], Hissing of the Electric Arc	28	400, 445
[<i>Discussion</i>] Experiments on Alternate-Current Arcs by Aid of Oscillographs	28	468
" Hissing of the Electric Arc [<i>Reply</i>]	28	445
—, Award of Premium to (1899)	28	639
Ayrtton, W. E., Inaugural Address as President (Electrotechnics)	21	5
[<i>Discussion</i>] Accumulator Traction	26	685, 689
" Alternate-Current Transformers	22	78
" Capacity in Alternative-Current Working... ..	30	387, 388, 460
" Cause of Changes of E.M.F. in Secondary Batteries	21	460, 529
" Design of Electric Railway Motors... ..	27	621, 630
" Distribution of Power by Alternate-Current Motors	22	335
" Disturbance of Submarine Cable Working by Electric Tramways	26	521
" Electric Traction by Surface Contacts	28	260
" Electric Tramways	27	471
" Electric Wiring	25	124
" Electrical Power Bills of 1900	30	521
" Electrical Time Service	29	147
" Electrolytic Process for Manufacture of Parabolic Reflectors	27	113
" Experiments on Alternate-Current Arcs by Aid of Oscillographs	28	451, 464
" Frictionless Motor Meter	29	7

	VOL.	PAGE
Ayrton, W. E. (<i>continued</i>)—		
<i>Discussion</i>] Influence of Shape of Applied Potential Difference		
Wave on the Iron Losses of Transformers ...	25	510
,, Hissing of the Electric Arc	28	441
,, Light of the Electric Arc	21	403
,, Magnetic Balance for Tests of Permeability ...	27	532, 539
,, Magnetic Space Telegraphy	27	912
,, Magnetic Tester for Measuring Hysteresis in Sheet		
Iron	24	413
,, New Form of Portable Photometer	22	209
,, Oil as an Insulator	21	280
,, Parallel Working, with Special Reference to Long		
Lines	23	298
,, Prevention and Control of Sparking, &c.	22	409
,, Problems of Commercial Electrolysis	21	578, 583
,, Rapid Variations in Current through Direct-		
Current Arc	30	267
,, Relative Advantages of Alternating- and Con-		
tinuous-Current Electricity Supply	30	11
,, Standardisation of Electrical Engineering Plant ...	29	333
,, Storage Battery Problems	29	497
,, Telephone Trunk Line System in Great Britain ...	25	668
,, Testing and Working Alternators	22	136
,, Watt-Hour Meter	30	963
,, Wiring Rules	28	183, 198, 205, 237
—, In Reference to the Death of Professor G. F. Fitzgerald	30	510
Ayrton, W. E., and T. Mather—		
<i>[Papers]</i> Transparent Conducting Screens for Electric and		
other Apparatus	23	376
,, An Astatic Station Voltmeter	23	380
Reply to Remarks on the above Papers	23	388, 391
,, A Universal Shunt Box for Galvanometers	23	314
Supplementary Remarks on the above Paper ...	23	362
Reply to Remarks on the above Paper	23	325, 369
—, and C. S. Whitehead [<i>Paper</i>], The Best Resistance for		
the Receiving Instrument on a Leaky Telegraph Line	23	327
—, Reply to Remarks on the above Paper	23	373

B.

Bailey, Frank [<i>Discussion</i>], Testing and Working Alternators ...	22	185
Baillie, G. H.—		
<i>[Discussion]</i> Capacity in Alternate-Current Working ...	30	452
,, Electrical Power Bills of 1900	30	532
Baily, F. G.—		
<i>[Discussion]</i> Magnetic Tester for Measuring Hysteresis in		
Sheet Iron	24	420
,, Wiring Rules	28	217

TRANSACTIONS.

BAK—BAY 9

	VOL.	PAGE
Baker, C. A. [<i>Discussion</i>], Electrical Power Bills of 1900	30	530
Baker, Graff [<i>Discussion</i>], Load Diagrams of Electric Tramways ...	21	312
Balance, Magnetic, for Workshop Tests of Permeability (J. A. Ewing)	27	526
<i>Discussion</i> :—Ayrton, W. E., 532, 539; Evershed, S., 539; Ewing, J. A. (in reply), 543; Hadfield, R. A., 539; Hartnell, W., 540; Hawkins, C. C., 541; Jenkins, R., 541; Mordey, W. M., 536; Perry, J., 533, 536; Scott, E. K., 542; Swan, J. W. (President), 539; Swinburne, J., 538; Thompson, S. P., 534.		
Balance Sheet. [See <i>Accounts</i> .]		
Barnes, J. S. [<i>Discussion</i>], Use of Electricity in Coal Mines	30	872
Barnett, P. M. [<i>Discussion</i>], Supersession of Steam by Electric Locomotives	30	213
Barr, James Mark, S. Beeton, and C. P. Taylor, Experimental Tests on the Influence of the Shape of the Applied Potential Difference Wave on the Iron Losses of Transformers ...	25	474
———, Reply to Discussion on the above Paper	25	514
———, Award of Institution Premium to (1896)	25	684
Barr, A. [<i>Discussion</i>], Supersession of Steam by Electric Locomotives	30	208
Bate, A. H. [<i>Discussion</i>], Polyphase Equipment of Factories ...	30	1016
Bateman, A. H. [<i>Discussion</i>], Electrical Time Service	29	145
Bathurst, F. [<i>Paper</i>], The Electric Wiring Question	24	582
[<i>Discussion</i>] Electric Wiring Question [<i>Reply</i>]	25	30, 172
„ Prevention of Interruptions to Electricity Supply	27	514
„ Standardisation of Electrical Engineering Plant	29	339
„ Wiring Rules	28	180
Batteries, Secondary, Cause of the Changes of Electro- motive Force in (J. H. Gladstone and Walter Hibbert) ...	21	412
<i>Discussion</i> :—Armstrong, H. E., 443; Ayrton, W. E. (the President), 460, 529; Crompton, R. E., 449; Dimier, Paul, 456; Gladstone, J. H. (in reply), 461; Hibbert, Walter (in reply), 458; Robertson, G. H., 443; Smith, E. Wythe, 453; Swin- burne, J., 455.		
Batteries, Storage, in Electric Power Stations, con- trolled by Reversible Boosters (J. S. Highfield)	30	1040
<i>Discussion</i> :—Booth, W. H., 1088; Crompton, Lt.-Col. R. E., 1082; Esson, W. B., 1084; Grindle, G. A., 1077; Hewlett, E. H., 1090; Highfield, J. S. (in reply), 1090; Patchell, W. H., 1077; Sayers, H. M., 1079; Scott, E. K., 1087; Shoolbred, J. N., 1075; Trotter, A. P., 1084; Walker, S. F., 1086; Wilson, E., 1080; Wood, R., 1089; Wordingham, C. H., 1078.		
———, Storage, Use of, in connection with Electric Tramways, (G. A. Grindle). [Manchester Local Section]	30	1098
Battery, Storage, Problems (E. J. Wade)	29	460
<i>Discussion</i> :—Addenbrooke, G. L., 507; Allingham, G. C., 507; Armstrong, H. E., 495; Ayrton, W. E., 497; Boyd, W., 521; Cooper, W. R., 509; Du Pasquier, A. E., 514; Fitz- Gerald, D., 512; Hibbert, W., 503; Robertson, G. H., 518; Swinburne, J., 510; Wade, E. J. (in reply), 524; Walker, S. F., 520.		
Bauerman, H. [<i>Discussion</i>], Electro-chemical Treatment of Ores ...	27	74
Baylor, A. K. [<i>Paper</i>], Recent Developments in Electric Traction Appliances	28	34

	VOL.	PAGE
Baylor, A. K. [<i>Discussion</i>] Electric Traction Appliances [<i>Reply</i>] ...	26	426
Baynes, Sydney—		
[<i>Discussion</i>] Apparatus for 200-Volt Circuits ...	27	196
,, High-Voltage Lamps ...	25	286
Beeton, Stanley, C. P. Taylor, and J. M. Barr, Experimental Tests on the Influence of the Shape of the Applied Potential Difference Wave on the Iron Losses of Transformers ...	25	474
———, Award of Institution Premium to (1896) ...	25	684
Bell, J. R. [<i>Discussion</i>], Accumulator Traction... ..	26	760
Benest, H. [<i>Paper</i>], Some Repairs to the South American Company's Cable off Cape Verde in 1893 and 1895 ...	26	209
———, Reply to Discussion on the Paper ...	26	304
———, Award of Fahie Premium to (1897) ...	26	719
Benevolent Fund, Wilde. [See <i>Wilde</i> .]		
Berry, H. H. [<i>Discussion</i>], Wiring Rules ...	28	212
Berwick, D. C. [<i>Discussion</i>], Electrolytic Process for the Manufacture of Parabolic Reflectors... ..	27	113
Bevan, E. J. [<i>Discussion</i>], The Problems of Commercial Electrolysis	21	568
———, Mark, Obituary Notice of... ..	29	948
Bigland, H. H. [<i>Discussion</i>], Electrically-driven Machine-Tools ...	30	563
Binswanger, G. [See <i>Byng</i> .]		
Birks, L.—		
[<i>Discussion</i>] Report of Swiss Visit ...	29	233
,, Standardisation of Electrical Engineering Plant ...	29	327
Birmingham Local Section, Area of ...	30	347
———, Committee (1901) ...	30	347
———, Inaugural Address of Dr. Lodge (Chairman)... ..	30	796
———, Inaugural Meeting of ...	30	795
———, Polyphase Equipment of Factories (<i>W. Wyld</i>). [See <i>Polyphase</i>] ...	30	986
Blackburn, A. B.—		
[<i>Discussion</i>] Polyphase Equipment of Factories ...	30	1016
,, Standardisation of Electrical Engineering Plant... ..	29	305
Blackwell, R. W. [<i>Discussion</i>] Load Diagrams of Electric Tramways	21	327
———, Robert W., and Philip Dawson [<i>Paper</i>], Electric Traction, with Special Reference to the Installation of Elevated Conductors	23	649
Block and Mechanical Signals on Railways, Electrically Interlocking the (F. T. Hollins). [See <i>Signals</i>] ...	26	37
Blount, B.—		
[<i>Discussion</i>] Cost of Steam Raising and of Electrical Energy...	29	83
,, The Problems of Commercial Electrolysis ...	21	575
Board of Trade, Deputation to, on the Subject of Maximum Charge for Electricity Supply ...	30	1221
Boer Dynamo-Exploder, Presentation of, to the Institution by Lt.-Col. R. E. Crompton ...	30	89
Bold, E. H., Obituary Notice of ...	30	1244
Boosters, Reversible, Storage Batteries in Electric Power Stations Controlled by (<i>J. S. Highfield</i>). [See <i>Batteries</i>] ...	30	1040
Boot, H. L. P.—		
[<i>Discussion</i>] Apparatus for 200-Volt Circuits ...	27	137
,, Capacity in Alternate-Current Working ...	30	442
,, Cost of Electrical Energy ...	27	423
,, Cost of Steam Raising and of Electrical Energy...	29	97

TRANSACTIONS.

BOO—BUC 11

	VOL.	PAGE
Boot, H. L. P. (<i>continued</i>)—		
[<i>Discussion</i>] Electric Wiring	25	142
,, Frictionless Motor Meter	29	786
,, Registration of Small Currents	27	572
Booth, W. H.—		
[<i>Discussion</i>] Single-Acting High-Speed Engine	24	485
,, Storage Batteries Controlled by Reversible Boosters	30	1088
Boyd, W. [<i>Discussion</i>], Storage Battery Problems	29	521
Braithwaite, J. B. [<i>Discussion</i>], Electric Lighting of the City of London	23	187
Brett, Jacob, Announcement of the Death of	26	2
———, ———, Presentation by Mr. Latimer Clark of Papers, Manu- scripts, &c., belonging to the late	27	2
———, Capt. W. P.—		
[<i>Discussion</i>] Applications of Electricity in Medical and Surgi- cal Practice	29	373
,, Magnetic Space Telegraphy... ..	27	944
,, Wireless Telegraphy	28	295
Bright, C.—		
[<i>Discussion</i>] Capacity Measurements of Long Submarine Cables	28	496
,, Disturbance of Submarine Cable Working by Electric Tramways	26	515
,, Insulation on Cables... ..	30	686
,, Magnetic Space Telegraphy	27	955
,, Railway Telegraphs	25	418
,, Repairs to the South American Company's Cable	26	260
,, Standardisation of Electrical Engineering Plant	29	337
,, Universal Shunt Box for Galvanometers	23	368
,, Wiring Rules	28	209
Brōadbent, F. [<i>Paper</i>], Notes on Wiring Rules. [Newcastle Local Section]	30	1130
[<i>Discussion</i>] Electrically-driven Machine Tools	30	561
,, Wiring Rules [<i>Reply</i>]	30	1156
Brousson, R. P. [<i>Discussion</i>], Electric Locomotives	28	620
Brown, A. C.—		
[<i>Discussion</i>] Magnetic Space Telegraphy... ..	27	948
,, Wireless Telegraphy... ..	28	305
———, Boveri & Co., Visit to Works of	29	198
———, ——— Motors, Exhibition of, by C. P. Sparks	22	320
Brown, C. E. L.—		
[<i>Discussion</i>], Electric Traction Appliances	26	424
,, Electrical Transmission of Power from Niagara... ..	22	600
Brown, E. [<i>Paper</i>], Temperature Rise in Field Coils of Dynamos	30	1159
Brown, E. [<i>Discussion</i>], Use of Electricity in Coal Mines	30	867
———, F. [<i>Discussion</i>], Wiring Rules	28	190
———, J.—		
[<i>Discussion</i>] Accumulator Traction	26	714
,, Supersession of Steam by Electric Locomotives	30	189
———, S. G. [<i>Discussion</i>], Dynamos	26	618
Buchanan, J. Y. [<i>Discussion</i>], Repairs to the South American Company's Cable	28	285
Buckney, T., Obituary Notice of	29	9

	VOL.	PAGE
Building Fund, Formation of	22	575
Burgdorf-Thun Electric Railway, Visit to	29	224
Burnet, Lindsay [<i>Discussion</i>], Cost of Electrical Energy	23	498
Byng, G. Binswanger- [<i>Paper</i>], Manufacture of Lamps and other Apparatus for 200-Volt Circuits	27	118, 200
[<i>Discussion</i>] Apparatus for 200-Volt Circuits [<i>Reply</i>]	27	200
,, Electric Wiring	25	140
,, Telephone Exchanges	25	358

C.

Cable, South American Company's, Repairs to, in 1893 and 1895 (H. Benest)	26	209
——, Submarine. [See <i>Submarine</i> .]		
Cables. [See also <i>Capacity in Alternate-Current Working</i>]	30	364
——, Duplexing of (H. H. Kingsford)	30	1020
——, Insulation on (M. O'Gorman). [See <i>Insulation</i>]	30	608
——, Polyphase, Capacities of (A. Russell)	30	1022
——, Telegraph, Broken; Graphic Method of Studying the Behaviour of the Exposed Ends of (G. K. Winter and G. B. Winter)	22	348
——, Triphase, Lead-Covered, Armoured, Prices of	30	680
Calculation of Distributing Systems of Electric Traction under British Conditions (H. M. Sayers). [See <i>Traction</i>]	29	692
Calcutta Local Section, Formation of	30	347
——, Inaugural Address of, Mr. F. G. Maclean as Chairman (1901)	30	979
——, Resolution of Condolence with the King on the Death of Her Majesty Queen Victoria	30	394
Calder, A. [<i>Discussion</i>], Telephone Switch-Board	24	66
Callendar, H. L. [<i>Discussion</i>], Alternate-Current Measurement	30	924
Campbell, A.—		
[<i>Paper</i>] Test-Room Methods of Alternate-Current Measurement. [See <i>Measurement</i>]	30	889
[<i>Discussion</i>] Alternate-Current Measurement [<i>Reply</i>]	30	925, 1128
,, Watt-Hour Meter	30	964
Canada, Electrical Tramways in (H. D. Wilkinson). [See <i>Traction</i>]	23	562, 630
Capacities of Polyphase Cables (A. Russell)	30	1022
Capacity in Alternate-Current Working (W. M. Mordey)	30	364
<i>Discussion</i> :—Addenbrooke, G. L., 440; Andrews, L., 458; Ayrton, W. E., 387, 388, 460; Baillie, G. H., 452; Boot, H. L. P., 442; Cruise, E. G., 446; Duddell, W., 459; Esson, W. B., 436; Fleming, J. A., 408; Fricker, G. C., 431; Gray, W. E., 420; Mather, T., 410; Minshall, T. H., 425; Mordey, W. M. (in reply), 388, 391, 396, 463; Nisbett, G. H., 443; O'Gorman, M., 417; Russell, A., 438; Russell, S. A., 433; Sayers, H. M., 432; Sparks, C. P., 397; Sumpner, W. E., 405; Swinburne, J., 408; Threlfall, R., 422; Whalley, A., 454; Wilson, E., 437.		
Capacity Measurements, Absolute Values of (J. Elton Young)	29	941
—— of Long Submarine Cables (J. Elton Young). [See <i>Submarine</i>]	28	475

	VOL.	PAGE
Cape Town Local Section, Creation of	29	119
—, Resolution of Condolence with the King on the Death of Her Majesty Queen Victoria	30	394
—, Report of (1900–1901)	30	1208
Capstans, Electrical (<i>C. E. Grove</i>)	29	585, 611
Cardew, Major P. [<i>Paper</i>], Note on Electric Tramways ...	27	456, 460, 484
[<i>Discussion</i>] Electric Tramways (<i>Reply</i>)	27	484
" Specification of Insulated Conductors, &c., ...	21	191
" Supersession of Steam by Electric Locomotives ...	30	173
Carter, E. Tremlett.—		
[<i>Discussion</i>] Accumulator Traction	26	686, 710
" Electric Traction by Surface Contacts	28	265
" Electrical Distribution by the Newcastle-on-Tyne Company	21	499
" Generation of Electrical Energy for Tramways ...	26	471
" Influence of Shape of Applied Potential Difference Wave on the Iron Losses of Transformers ...	25	509
" Light of the Electric Arc	21	399
" Oil as an Insulator	21	283
" Single-Acting High-Speed Engine	24	488
" Utilisation of Water Power	25	542
" Wehnelt Interrupter	28	320
" Wireless Telegraphy	28	304
Carter, F. W. [<i>Paper</i>], Note on Air-gap and Interpolar Induction ...	29	925
Carus-Wilson, C. A. [<i>Paper</i>], The Design of Electric Railway Motors for Rapid Acceleration... ..	27	581, 630
[<i>Discussion</i>] Alternating Current Induction Motor	29	843
" Design of Electric Railway Motors [<i>Reply</i>] ...	27	630
" Electric Locomotives and Tractive Resistance in Tunnels	28	624
" Electric Traction by Surface Contacts	28	258
" Polyphase Sub-station Machinery	30	760
" Rotatory Converters	27	712
" Report of Swiss Visit... ..	29	231
" Supersession of Steam by Electric Locomotives...	30	177
Cecil, Lord Sackville Arthur, Obituary Notice of	28	665
Cell, Notes on a Selenium (<i>E. O. Walker</i>)	22	143
Central Station Practice, Influence of High Voltage Lamps (<i>G. L. Addenbrooke</i>). [<i>See Lamps</i>]	25	195
Central-Station Work, Single-Acting High-Speed Engine for, Recent Development of the (<i>Mark Robinson</i>). [<i>See Engine</i>]	24	434
Central Stations, British, Periodicity and Pressure in	29	300
Centrifugal, Electrolytic, Process for the Production of Copper Tubes (<i>S. Cowper-Coles</i>). [<i>See Electrolytic</i>]	29	258
Chamen, W. A.—		
[<i>Paper</i>], Electricity Supply [Glasgow Local Section]	30	105
[<i>Discussion</i>] Electricity Supply [<i>Reply</i>]	30	121
" Electric Driving	29	898
" Electric Light for Railway Purposes	24	341
" Electric Wiring	25	188
" Prevention and Control of Sparking, &c.	22	417

	VOL.	PAGE
Chandler, N. [<i>Discussion</i>], Single-Acting High-Speed Engine ...	24	492
Charging, Method of, for Public Supply of Electricity (<i>W. W. Lackie</i>). [Glasgow Local Section] ...	29	678
<i>Discussion</i> :—Lackie, W. W. (in reply), 689; Mavor, H. A., 689; Tidd, E. G., 689.		
Chattock, R. A. [<i>Discussion</i>], Prevention of Interruptions to Electricity Supply ...	27	509
Chatwood, A. B. [<i>Discussion</i>], Electrical Power Bills of 1900... ..	30	531
Chicago, Notes of a Trip to, 1893 (<i>Sir W. H. Preece</i>)	23	40
Childs, A. E. [<i>Discussion</i>], Electric Traction and Tramways... ..	23	740
Chitral Relief Force, 1895, Field Telegraphs with the (<i>F. E. Dempster</i>)	25	699
Choking-coil and Condenser Currents, Variation of, with Shape of the Wave of the Applied E.M.F. (<i>A. Russell</i>)	29	154
City and South London Railway. [See <i>Electric Locomotive</i> .] (<i>P. V. McMahon</i>)	28	508
— of London, Electric Lighting of the (<i>General C. E. Webber</i>) ...	23	120
Clarence, Duke of, Resolution of Condolence on Death of	21	1
Clark, J. Latimer, Obituary Notice of	28	667
—, —, Presentation of Papers, Manuscripts, &c., belonging to the late Mr. Jacob Brett	27	2
—, —, Reference to Death of	27	646
Clay, C. B.—		
[<i>Discussion</i>] Electrical Power Bills of 1900	30	523
„ Telephone Switch-Board	24	70
Clement, A. F. [<i>Discussion</i>], Railway Telegraphs	25	438
Clerk, Dugald [<i>Discussion</i>], Cost of Steam Raising and of Electrical Energy	29	81
Clinton, W. C. [<i>Discussion</i>], Rapid Variations in Current through Direct-Current Arc	30	278
Clirehugh, S. V. [<i>Discussion</i>], Generation of Electrical Energy for Tramways	26	487
Coal Mines, Electrical Power-Transmission in (<i>H. W. Ravenshaw</i>). [See <i>Mines</i>]	30	806
Coates, J.—		
[<i>Discussion</i>], Electric Driving	29	898
„ Electricity Supply	30	119
Cobb, P. R., Award of Salomons Scholarship to (1895)... ..	24	628
Cockburn, A. C. [<i>Discussion</i>], Wiring Rules	28	220
Coffin, W. H. [<i>Discussion</i>], Applications of Electricity in Medical and Surgical Practice	29	372
Commercial Electrolysis, Problems of (<i>James Swinburne</i>). [See <i>Electrolysis</i>]	21	507
Committees, Sectional, Appointment of	30	1217
Concentric Wiring (<i>Sam. Mavor</i>). [See <i>Wiring</i>]	24	602
Condenser and Choking-coil Currents, Variation of, with Shape of the Wave of the Applied E.M.F. (<i>A. Russell</i>)	29	154
Condict, G. H. [<i>Discussion</i>], Load Diagrams of Electric Tramways, &c.	21	330
Conductor, Electrical, Aluminium as (<i>J. B. C. Kershaw</i>)	30	348
Conductors, Copper, Report of Committee on	29	169
—, Elevated, Electric Traction, with Special Reference to the Installation of (<i>R. W. Blackwell and Philip Dawson</i>). [See <i>Traction</i>]	23	649

Conductors, Insulated, Specification of, for Electric Lighting and other Purposes (*Sir W. H. Preece*).

[*Supplementary Remarks*] **21** 185

Discussion :—Cardew, Major P., 191; Crompton, R. E., 207; Esson, W. B., 226; Forbes, George, 203; Gray, William, 198, 225; Hooper, J. P., 227; Mavor, A. E., 228; Preece, Sir W. H. (in reply), 230; Raworth, J., 212; Roberts, M. F., 196, 225; Russell, Stuart A., 219; Siemens, Alexander, 215; Swinburne, James, 225; Whalley, Alfred, 229.

Contact-Breaker, Wehnelt's Electrolytic (*A. A. C. Swinton*) **28** 317

Continuous and Alternating Current, Relative Advantages of, for Electricity Supply [*Discussion*]. [*See Alternating*] **30** 3

Continuous-Current and Three-phase Distribution, Relative Advantages of, for small Installations (*H. A. Earle*). [*See Distribution*] **30** 308

——— Arc, Rapid Variations of Current through (*W. Duddell*). [*See Arc*] **30** 232

——— Dynamos without Winding on the Field Magnets (*W. B. Sayers*) **22** 377, 435

Converter, A Rotary (*E. Wilson*) **28** 367

———, Rotary, A Two-Phase (*E. Wilson*) **29** 409

Converters, Rotatory (*S. P. Thompson*). [*See Rotatory*] **27** 651

———, Regulation of (*E. Wilson*) **29** 430

Cooper, A. T. [*Discussion*], Cost of Electrical Energy **27** 428

———, C. F. [*Discussion*], Problems of Commercial Electrolysis **21** 545

———, C. O. [*Discussion*], Problems of Commercial Electrolysis **21** 574

———, M., Obituary Notice of **29** 948

———, W. R. —

[*Discussion*] Electro-chemical Treatment of Ores **27** 88

„ Storage Battery Problems **29** 509

———, Award of Students' Premium to (1893) **22** 574

Copper Conductors, Report of Committee on **29** 169

——— Tubes, Centrifugal Electrolytic Process for the Production of (*S. Cowper-Coles*). [*See Electrolytic*] **29** 258

Corlett, G. S. [*Discussion*], Electric Wiring **25** 51

Cost of Electric Traction, and Load Diagrams for Electric Tramways (*A. Reckenzaun*). [*See Load*] **21** 293

Cost of Electrical Energy (*R. E. Crompton*) **23** 396, 468

Discussion :—Burnet, Lindsay, 498; Crompton, R. E. (in reply), 544; Dykes, A. H., 512; Geipel, W., 477; Gray, W. E., 538; Halpin, Druitt, 526; Hammond, R., 490; Henwood, E. N., 508; Holmes, A. B., 534; Hunter, W. D., 536; Kennedy, A. B. W., 521; McLaren, John, 494; McLean, J. Hardie, 496; Peache, J. C., 520; Raworth, J. S., 435; Robinson, Mark, 473; Rosenthal, J. H., 531; Schönheyder, W., 489; Segundo, E. C. de, 502, 526; Sharp, Archibald, 542; Shoolbred, J. N., 505; Unwin, W. C., 515; Webber, General, 468; Wilmshurst, T. P., 537.

Cost of Generation and Distribution of Electrical Energy

(*R. Hammond*) **27** 248

Discussion :—Addenbrooke, G. L., 410; Boot, H. L. P., 423; Cooper, A. T., 428; Cowan, E. W., 421; Cozens-Hardy, E. H., 431; Crompton, R. E., 381; Forbes, G., 389; Gadsby, C. H.,

Cost of Generation, &c., (continued)—*Discussion (continued):—*

420; Geipel, W., 426; Grimshaw, C. O., 391; Hammond, R. (in reply), 432; Kennedy, A. B. W., 396; Lawson, A. J., 413; Patchell, W. H., 408; Raworth, J. S., 400; Sayers, H. M., 415; Shoolbred, J. N., 402; Short, M., 430; Smith, R. H., 392; Snell, J. F. C., 429; Swan J. W. (the President), 396, 422; Webber, Major-General C. E., 379; Wordingham, C. H., 387.

Cost of Electrical Energy, Influence of Cheap Fuels on

(R. E. Crompton) **29** 62

Cost of Steam Raising (John Holliday) **29 32**

*Discussion on Mr. Holliday's and Mr. Crompton's Papers on the Cost of Steam Raising and of Electrical Energy:—*Addenbrooke, G. L., 84; Appleby, F. J., 106; Blount, B., 83; Boot, H. L. P., 97; Clerk, Dugald, 81; Crompton, R. E., 89 (in reply), 110; Donkin, Bryan, 107; Ferranti, S. Z. de, 77; Geipel, W., 99; Holliday, J. (in reply), 114; Huskisson, W., 108; Lawson, A. J., 102; Miller, H. W., 82; Perry, J., 90; Shoolbred, J. N., 96; Smith, R. H., 105; Stromeyer, C. E., 78.

Cotsworth, H. G. [*Discussion*], Hissing of the Electric Arc **28** 443

Cottam, G. H. [*Discussion*], Wiring Rules **28** 205

Council, Annual Report of. [See *Annual*.]

Council and Hon. Officers List for 1893 **21** 747

————— 1894 **22** 582

————— 1895 **23** 779

————— 1896 **24** 635

————— 1897 **25** 697

————— 1898-9 **26** 741

————— 1899-1900 **28** 653

————— 1900-1901 **29** 887

————— 1901-1902 **30** 1239

—————, Constitution of, Discussion on **22** 578

Covent Garden Opera House, Reception of Electrical Engineer

Volunteers on Return from Active Service **30** 123

Cowan, E. W. [*Discussion*], Cost of Electrical Energy **27** 421

Cowper-Coles, S. [*Papers*], Electrolytic Centrifugal Process for the

Production of Copper Tubes **29** 258

—————, in Reply to the Discussion on this Paper **29** 283

—————, Electrolytic Process for the Manufacture of Parabolic

Reflectors **27** 99

—————, in Reply to Discussion on this Paper **27** 114

Cozens-Hardy, E. H.—

[*Discussion*] Cost of Electrical Energy **27** 431

„ Electric Traction by Surface Contacts **28** 264

Crawley, C. W. S.—

[*Paper*] Note on the Use of the Differential Galvanometer.

[*For Discussion*, see under *Measurement*] **30** 908

[*Discussion*] Use of Differential Galvanometer [*Reply*] **30** 925, 1129

„ Watt-Hour Meter **30** 964

Creak, Capt. E. W., C.B., R.N.—

[*Discussion*] Electrical Equipment of Ships of War **29** 602

„ Propagation of Magnetisation in Iron **24** 206

TRANSACTIONS.

CRO—CUM 17

	VOL.	PAGE
Crocker, F. B. [<i>Discussion</i>], Relative Advantages of Alternating- and Continuous-Current Electricity Supply	30	16
Crompton, Lieut.-Col. R. E.—		
[<i>Papers</i>] Inaugural Address as President	24	4
„ Cost of Electrical Energy	23	396, 468, 544
„ Electrical Engineers, R.E., in South Africa	30	284
„ Influence of Cheap Fuels on Cost of Electrical Energy	29	62, 110
„ The Institution Wiring Rules	28	173, 236
[<i>Discussion</i>] Accumulator Traction	26	677
„ Alternate-Current Transformers	21	738
„ Apparatus for 200-Volt Circuits	27	137, 159
„ Cause of the Changes of E.M.F. in Secondary Batteries	21	449
„ Cost of Electrical Energy	23, 544; 27, 381; 29,	110
„ ——— Steam Raising and of Electrical Energy	29	89
„ Dynamos	26	602
„ Electric Light for Railway Purposes	24	311, 357
„ ——— Lighting of the City of London	23	191
„ ——— Wiring... ..	25	155
„ Electrical Distribution by the Newcastle-on-Tyne Company	21	489
„ ——— Equipment of Ships of War	29	605
„ ——— Power Bills of 1900	30	527
„ ——— Transmission of Power from Niagara	22	593
„ Electrolysis of Gold	24	270
„ Generation of Electrical Energy for Tramways	26	481
„ Load Diagrams of Electric Tramways	21	336
„ Prevention and Control of Sparking	22	419
„ Report of Swiss Visit	29	225
„ Reversible Regenerative Armatures, and Short Air-Space Dynamos	24	143, 178
„ Single-Acting High-Speed Engine	24	480, 512
„ Specification of Insulated Conductors	21	207
„ Standardisation of Electrical Engineering Plant	29	304
„ Storage Batteries controlled by Reversible Boosters	30	1082
„ Supersession of Steam by Electric Locomotives	30	157
„ Telephone Switch-Board	24	75
„ Testing and Working Alternators	22	181
„ Transparent Conducting Screens	23	387
„ Universal Shunt Box for Galvanometers	23	325
„ Wiring Rules	28	175, 237
———, in Acknowledging Vote of Congratulation to Electrical Engineers, R.E.	30	345
———, in Presenting Boer Dynamo-Exploder to Institution	30	39
———, in Reference to the Acceptance of Electrical Engineer Volunteers for Active Service in South Africa	29	193
Crookes, Sir W. [<i>Discussion</i>], New Form of Portable Photometer	22	208
Cross, C. F. [<i>Discussion</i>], Problems of Commercial Electrolysis	21	552
Cruise, E. G.—		
[<i>Discussion</i>] Capacity in Alternate-Current Working	30	448
„ Polyphase Sub-station Machinery	30	761
Cummins, C. P. C. [<i>Discussion</i>], Dublin Corporation Electric Light Scheme	30	54

	VOL.	PAGE
Cunningham, G. C. [<i>Discussion</i>], Supersession of Steam by Electric Locomotives	30	153
Current, Rapid Variations in, through Direct-Current Arc (<i>W. Duddell</i>). [<i>See Arc</i>]	30	232
Currents, Alternating. [<i>See Alternating Currents.</i>]		
——, Earth. [<i>See Earth Currents.</i>]		
Curves, Periodic, Simple Manner of Analysing (<i>E. Basil Wedmore</i>) ...	25	224
Cut-Outs for 200-Volt Circuits. [<i>See Binswanger-Byng</i>]	27	128
——, Discriminating (<i>L. Andrews</i>)	27	487

D.

Dale, D. R. [<i>Discussion</i>], Electric Lighting of the City of London ...	23	183
Dallas, J. D. [<i>Discussion</i>], Electric Traction and Tramways	23	739
David Hughes Scholarship, Announcement of Foundation	29	290
——, Conditions of Award	29	290
——, Awarded to Mr. C. J. Hopkins (1901)	30	1215
Davies, Capt. W. H., Obituary Notice of	28	672
Dawson, Philip [<i>Discussion</i>], Electric Traction Appliances	26	386
——, ——, and R. W. Blackwell [<i>Paper</i>], Electric Traction, with Special Reference to the Installation of Elevated Conductors	23	649
——, ——, Reply to Discussion on the above Paper	23	762
Dearlove, A. L. [<i>Discussion</i>], Capacity Measurements of Long Submarine Cables	28	501
Deeley, R. M. [<i>Discussion</i>], Supersession of Steam by Electric Locomotives	30	200
Dempster, F. E. [<i>Paper</i>], Field Telegraphs with the Chitral Relief Force, 1895	25	699
Dent, M. C., Obituary Notice of	29	949
Design, Electric Locomotive (<i>P. V. McMahon</i>). [<i>See Locomotive</i>] ...	28	508
Design of Electric Railway Motors for Rapid Acceleration (<i>C. A. Carus-Wilson</i>). [<i>See Motors</i>]	27	581
Diagrams (Load-) of Electric Tramways, and the Cost of Electric Traction (<i>A. Reckenzaun</i>). [<i>See Load</i>]	21	293
Dickinson, Alfred—		
[<i>Discussion</i>] Accumulator Traction	26	761
,, Electric Traction and Tramways	23	742
Dielectrics. [<i>See Insulation on Cables.</i>]		
——, Constants of	30	666
Differential Galvanometer, Use of (<i>C. W. S. Crawley</i>). [<i>For Discussion see under Measurement</i>]	30	908
Dimier, Paul [<i>Discussion</i>], The Cause of the Changes of E.M.F. in Secondary Batteries	21	456
Diploma, Rules relating to Issue of	28	239
Direct-Current and Three-phase Distribution, Relative Advantages of for Small Installations (<i>H. A. Earle</i>). [<i>See Distribution</i>]	30	308

	VOL.	PAGE
Direct-Current Arc, Rapid Variation in Current through (<i>W. Duddell</i>). [See <i>Arc</i>]	30	232
Discriminating Cut-Outs (<i>L. Andrews</i>)	27	487
Disruptive Strength of Dielectrics... ..	30	666
Distant Electric Power Transmission (<i>G. Forbes</i>). [See <i>Power</i>] ...	29	629
Distributing Systems of Electric Traction, Calculation of (<i>H. M. Sayers</i>). [See <i>Traction</i>]	29	692
Distribution, Direct-Current and Three-phase, Relative Advantages for Small Installations (<i>H. A. Earle</i>) ...	30	308
<i>Discussion</i> :— <i>Earle</i> , <i>H. A.</i> (in reply), 325; <i>Lindley</i> , 323; <i>Miller</i> , <i>T. L.</i> , 322; <i>Sayers</i> , <i>W. B.</i> , 323; <i>Whalley</i> , <i>A.</i> , 323; <i>Wood</i> , <i>A. P.</i> , 323; <i>Wyld</i> , <i>W.</i> , 324.		
Distribution, Electrical, by the Newcastle-on-Tyne Electric Supply Company, Limited (<i>A. W. Heaviside</i> and <i>R. C. Jackson</i>)	21	475
<i>Discussion</i> :— <i>Albright</i> , <i>J. F.</i> , 493; <i>Carter</i> , <i>E. T.</i> , 499; <i>Crompton</i> , <i>R. E.</i> , 489; <i>Esson</i> , <i>W. B.</i> , 499; <i>Heaviside</i> , <i>A. W.</i> (in reply), 501; <i>Mordey</i> , <i>W. M.</i> , 496; <i>Preece</i> , <i>Sir W. H.</i> , 493; <i>Richardson</i> , <i>J.</i> , 500; <i>Russell</i> , <i>Earl</i> , 499; <i>Salomons</i> , <i>Sir David</i> , 495.		
Distribution of Electrical Energy at Genoa (<i>Louis Goichot</i>)	22	445
Dobbie, <i>R. S.</i> — [<i>Discussion</i>] Electrically-driven Machine Tools... ..	30	562
,, Supersession of Steam by Electric Locomotives	30	194, 195, 196
Dolby, <i>E. R.</i> [<i>Discussion</i>], Load Diagrams of Electric Tramways ...	21	318
Donaldson, <i>J. M.</i> , Award of Students' Premium to (1898)	28	638
Donkin, <i>Bryan</i> [<i>Discussion</i>], Cost of Steam Raising and of Electrical Energy	29	107
Donovan, <i>H. C.</i> — [<i>Discussion</i>] Electric Wiring	25	45
,, Oil as an Insulator	21	278
,, Repairs to the South American Company's Cable	26	275
Douglass, <i>Sir J. N.</i> , Obituary Notice of	28	672
Dowsett, <i>H. M.</i> , Award of Students' Premium to (1899)	28	630
Dowson, <i>J. Emerson</i> [<i>Discussion</i>], Electric Light for Railway Purposes	24	352
Doyle, <i>J. D.</i> , Obituary Notice of	29	949
Drake, <i>B.</i> [<i>Discussion</i>], Wiring Rules	28	176
Dresing, <i>P. C.</i> , Obituary Notice of	28	672
Driving, Electrical, of Machine Tools (<i>G. Ralph</i>)	30	545
Driving, Electric, Some Considerations Concerning (<i>H. A. Mavor</i>). [<i>Glasgow Local Section</i>]	29	889
<i>Discussion</i> :— <i>Chamen</i> , <i>W. A.</i> , 898; <i>Coates</i> , 898; <i>Gray</i> , <i>A.</i> , 898; <i>Mavor</i> , <i>H. A.</i> (in reply), 898; <i>Stewart</i> , <i>A.</i> , 898; <i>Watkinson</i> , <i>Prof. W. H.</i> , 898.		
Drummond, <i>R. O. G.</i> , Obituary Notice of	28	673
Drysdale, <i>C. V.</i> — [<i>Discussion</i>] Alternate-Current Measurement, &c.	30	918
,, Instrument for Measuring Permeability of Iron and Steel	30	942
,, Watt-Hour Meter	30	965

	VOL.	PAGE
Dublin Corporation Electric Light Scheme (<i>R. Hammond</i>) ...	30	540
<i>Discussion</i> :—Cummins, C. P. C., 543; Fitzgerald, G. F., 543; Hammond, R. (in reply), 544; Humphries, R., 543; Malpas, A. E., 543; Porte, A. C., 542; Sayer, G. H., 543; Sykes, J. R., 543.		
Dublin Local Section, Area of	30	347
———, Creation of (1899)	29	118
———, Inaugural Address of Prof. G. F. Fitzgerald as Chairman	29	394
———, The Dublin Corporation Electric Light Scheme (<i>R. Hammond</i>)... ..	30	540
———, Reference to the Death of Professor G. F. Fitzgerald	30	772
———, Resolution of Condolence with the King on the Death of Her Majesty Queen Victoria ...	30	394
Duddell, W. [<i>Paper</i>], Rapid Variations in Current through Direct-Current Arc	30	232
———, in Reply to Discussion on this Paper	30	278
———, [<i>Discussion</i>] Capacity in Alternate-Current Working	30	459
———, Award of Paris Electrical Exhibition Premium to (1899) Do. do. (1901)	28	639
———, and E. W. Marchant [<i>Paper</i>], Experiments on Alternate-Current Arcs by Aid of Oscillographs	30	1214
———, in Reply to the Discussion on this Paper	28	1
Dumas, R. [<i>Discussion</i>], Single-Acting High-Speed Engine	28	470
Duplexing of Cables (<i>H. H. Kingsford</i>)	24	508
Dynamos (<i>W. M. Mordey</i>)	30	1020
<i>Discussion</i> :—Adams, G., 577; Atkinson, L. B., 621; Brown, S. G., 618; Crompton, R. E., 602; Esson, W. B., 588; Evershed, S., 610; Finlay, A. H., 617; Gadsby, C. H., 609; Hawkins, C. C., 603; Jamieson, A., 605; Kapp, G., 611; Kelvin, Lord, 610; Mavor, H. A., 601; Mordey, W. M. (in reply), 624; Raworth, J. S., 593; Sayers, W. B., 579; Scott, E. K., 595; Swinburne, J., 613; Thompson, S. P., 574; Weekes, R. W., 607.	26	533
———, Constant Pressure, without Series Winding (<i>W. B. Sayers</i>). [<i>See Sparking</i>]	22	377, 435
———, Continuous-Current, Air-Gap Induction in (<i>C. C. Hawkins and R. Wightman</i>)	29	436
———, ———, without Winding on the Field Magnets (<i>W. B. Sayers</i>). [<i>See Sparking</i>]	22	377, 435
———, Field Coils of, Rise of Temperature in (<i>E. Brown</i>)	30	1159
———, for Use in Ships of War (<i>C. E. Groves</i>)... ..	29	531
———, Prevention of Sparking in (<i>W. B. Sayers</i>). [<i>See Sparking</i>]	22	377, 435
Dynamo-electric Machines, Relative Size, Weight, and Price of (<i>Ernest Wilson</i>)	26	160
<i>Discussion</i> :—Esson, W. B., 165, 171; Geipel, W., 170; Mance, Sir Henry (President), 178; Mavor, S., 171; Ravenshaw, H. W., 169; Scott, E. K., 170; Thompson, S. P., 165; Wilson, Ernest (in reply), 174.		
<i>Dynamos, Short-Air-Space, and Reversible Regenerative Armatures</i> (<i>W. B. Sayers</i>). [<i>See Armatures</i>]	24	122
<i>Dynamometer-Wattmeter Method of Measuring Alternate-Current Power</i>	21	623

	VOL.	PAGE
Dykes, A. H.—		
[Discussion] Cost of Electrical Energy	23	512
,, Electric Wiring	25	152
Dyson [Discussion], Supersession of Steam by Electric Locomotives	30	201

E.

Earle, H. A. [Paper], Relative Advantages of Direct-Current and Three-phase Distribution for Small Installations. [Manchester Local Section]	30	308
———, in reply to Discussion on his Paper	30	325
Earth Currents in India (<i>E. O. Walker</i>)	22	214
Discussion:—Adams, A. J. S., 221; Preece, Sir W. H. (the President), 223; Salomons, Sir David, 223; Walker, E. O. (in reply), 223.		
———, Eliminating Effect of, in Cable Fault Testing (<i>G. K. and G. B. Winter</i>)	22	348
———, Returns for Electric Tramways (<i>H. F. Parshall</i>). [See <i>Tramways</i>]	27	440
Eborall, A. C. [Paper], Alternating Current Induction Motors	29	799
———, in Reply to the Discussion on this Paper	29	849
——— [Paper], Notes on Polyphase Sub-station Machinery	30	702
———, in Reply to the Discussion on this Paper	30	766
———, Award of Fahie Premium to (1901)	30	1214
———, ——— of Students' Premium to (1895)	24	628
Edmondson, Joseph, Zero-Torque Electricity Meter	24	542
Edmunds, Henry [Discussion], Electric Traction Appliances	26	422
Edwards, F. J. [Discussion], Polyphase Sub-station Machinery	30	763
Effect of Governors on the Parallel Running of Alternators (<i>L. Wilson</i>)	28	389
Eidsforth, R. P., Obituary Notice of	28	673
Election of Associates, Mode of	21, 722	574
Electric Arc, Notes on the Light of the (<i>A. P. Trotter</i>). [See <i>Notes</i>]	21	360
——— Driving, Some Considerations concerning (<i>H. A. Mavor</i>). [See <i>Driving</i>]	29	889
——— Light. [See <i>Light</i> .]		
——— Locomotive, Supersession of Steam Locomotive by (<i>W. Langdon</i>). [See <i>Locomotive</i>]	30	124
——— Power Stations, Storage Batteries, controlled by Reversible Boosters, in (<i>J. S. Highfield</i>). [See <i>Batteries</i> .]	30	1040
——— Traction Appliances, Recent Developments in (<i>A. K. Baylor</i>)	26	344
——— Traction, Cost of (<i>A. Reckenzaun</i>). [See <i>Load</i>]	21	293
——— Tramways, Disturbance of Submarine Cable Working by (<i>A. P. Trotter</i>)	28	501
——— Wiring. [See <i>Wiring</i> .]		
——— Question, The (<i>F. Bathurst</i>)	24	582
Electrical Energy, Cost of (<i>R. E. Crompton</i>). [See <i>Cost</i>]	23	396, 465

	VOL.	PAGE
Electrical Energy, Cost of Generating and Distributing (<i>R. Hammond</i>)	27	246
———, Generation of, Application of Steam Power to (<i>J. S. Raworth</i>)	30	971
———, ———, ———, for Tramways (<i>J. S. Raworth</i>). [See <i>Tramways</i>]	26	432
———, Influence of Cheap Fuels on Cost of (<i>R. E. Crompton</i>)	29	62
———, Utilisation of Water Power for Generation of (<i>Alph. Steiger</i>)	25	521
——— Engineers (R.E.) Volunteers. [See <i>Volunteers</i> .]		
———, Training of (<i>J. T. Nicolson</i>). [See <i>Training</i>]	30	773
——— Equipment of Ships of War (<i>C. E. Grove</i>). [See <i>Ships</i>]	29	530
——— Miner's Safety Lamp (<i>S. F. Walker</i>). [See <i>Miners</i>]	30	815
——— Power Bills of 1900, Before and After (<i>W. L. Madgen</i>). [See <i>Power</i>]	30	475
——— Time Service (<i>F. Hope-Jones</i>). [See <i>Time</i>]	29	119, 286
——— Transmission of Power in Coal Mines (<i>H. W. Ravenshaw</i>). [See <i>Mines</i>]	30	806
Electrically-driven Machine Tools and their Advantages for Use in Engineering Workshops (<i>G. Ralph</i>). [See <i>Tools</i>]	30	545
Electricity, Applications of, in Medical and Surgical Practice (<i>Dr. H. Lewis Jones</i>)	29	346
———, ——— in Paris Exhibition (<i>Gen. C. E. Webber</i>)	30	23
——— in Tanning Operations, Influence of (<i>C. K. Falkenstein</i>)	22	225
——— Meters for Registration of Small Currents (<i>A. H. Gibbings</i>)	27	547
———, Production and Utilisation of, Exhibits in Paris Exhibition (<i>E. Hospitalier</i>)	30	26
Electricity Supply (<i>W. A. Chamen</i>). [Glasgow Local Section]	30	105
<i>Discussion</i> :—Chamen, W. A. (in reply), 121; Coates, J., 119; Ionides, P. D., 118; Kelvin, Lord, 118; Macclay, Bailie, 115; Maclean, M., 119; McWhirter, W., 120; Mavor, S., 118; Munro, J. M., 117; Pickstone, M. T., 115; Sayers, W. B., 115.		
Electricity Supply Meters (Paper read at Students' Meeting) (<i>G. W. D. Ricks</i>)	25	57
———, Prevention of Interruptions to (<i>L. Andrews</i>). [See <i>Prevention</i>]	27	487
———, Public, Method of Charging for (<i>W. W. Lackie</i>). [See <i>Charging</i>]	29	678
———, Relative Advantages of Alternating and Continuous Current, Discussion. [See <i>Alternating</i>]	30	3
Electro-chemical Exhibits in Paris Exhibition (<i>C. Hering</i>)	30	34
Electro-chemical Treatment of Ores containing the Precious Metals (<i>General C. E. Webber</i>)	27	38
<i>Discussion</i> :—Bauerman, H., 74; Cooper, W. R., 88; Herroun, E. F., 69; Jenkins, H. C., 74; Louis, D. A., 87; Pelatan, L., 76, 82; Sparks, J. Noel, 88; Sulman, H. L., 70, 79, 82; Swan, J. W. (President), 98; Teed, Dr. F. L., 67; Webber, General C. E. (in reply), 92.		
Electrolysis, Commercial, Problems of (<i>James Swinburne</i>)	21	507
<i>Discussion</i> :—Addenbrooke, G. L., 565; Andreoli, Gabriel, 572; Ayrton, W. E. (President), 578, 583; Bevan, E. J., 568; Blount, B., 575; Cooper, C. F., 545; Cooper, C. O., 574; Cross, C. F., 552; Falconer, A. C., 558, 564, 583; Falkenstein, Conrad, F., 548; Fitz-Gerald, Desmond G., 555; Lloyd, C. O.,		

Electrolysis, Commercial, Problems of (continued)—*Discussion (continued):—*

566; Mavor, A. E., 558; Mordey, W. M., 578; Perry, J., 555; Rawson, W. Stepney, 549; Richardson, J. C., 579, 580; Sinclair, A., 585; Swan, J. W., 576; Swinburne, J. (in reply), 588; Thompson, S. P., 560; Trotter, A. P., 571.

Electrolysis of Gold (N. S. Keith) 24 236

*Discussion:—*Crompton, R. E. (the President), 270; Fitzgerald, Desmond, 267; Keith, N. S. (in reply), 271; Picard, 267; Preller, Du Riche, 269; Rideal, Dr., 264; Swinburne, J., 266; Vautin, Claude, 260.

Electrolytic Centrifugal Process for the Production of Copper Tubes (S. Cowper-Coles) 29 258

*Discussion:—*Addenbrooke, G. L., 281; Cowper-Coles, S. (in reply), 283; Ferranti, S. Z. de, 280; Gibbings, W., 282; Mordey, W. M., 280; Thompson, S. P. (President), 281, 284; Wilde, Dr. H., 279; Williams, A., 282.

Electrolytic Contact-Breaker, Wehnelt's (A. A. C. Swinton) 28 317**Electrolytic Process for the Manufacture of Parabolic Reflectors (S. Cowper-Coles) 27 99**

*Discussion:—*Ayrton, W. E., 113; Berwick, D. C., 113; Cowper-Coles, S. (in reply), 114; Grove, C. E., 109; Hosack, 110; Mordey, W. M., 111; Pilcher, O. A., 111; Speirs, C. W., 111, 113, 114; Swan, J. W. (President), 112, 113, 115; Webber, General, 110.

Electro-Magnet Coils, Advantages of Connecting in Multiple Arc (F. Higgins) 22 362**Electro-motive Force in Secondary Batteries, Cause of the Changes of (Dr. J. H. Gladstone and Walter Hibbert). [See Cause] 21 412****Electrolytic Meter (A. H. Gibbings) 27 547****Electrotechnics (Inaugural Address of Professor W. E. Ayrton, as President) 21 5****Ellis, W. [Discussion], Electrical Time Service 29 149****Employment Register 30 1221****Energy, Electrical, Cost of. [See Cost.]****Engelberg-Stansstad Electric Railway, Visit to 29 221****Engine, Single-Acting High-Speed, Recent Development of, for Central-Station Work (Mark Robinson) 24 434**

*Discussion:—*Allen, R. W., 507; Booth, W. H., 485; Carter, W. Tremlett, 488; Chandler, N., 492; Crompton, R. E., (President), 480, 512; Dumas, R., 508; Geipel, W., 503; Halpin, Druitt, 502; Head, J., 512; Hudson, J. G., 522; Morcom, A., 494; Preller, C. Du Riche, 520; Raworth, J. S., 481; Robinson, Mark (in reply), 524; Sale, Col. M. T., 489; Sankey, Capt. H. B., 518; Shoolbred, J. N., 505; Siemens, Alexander, 492; Wright, A., 501.

Engineering Workshops, Use of Electrically-driven Machine Tools in (G. Ralph). [See Tools] 30 545**Engineers, Electrical, Training of (J. T. Nicolson). [See Training]... 30 773****Epstein, L. [Paper], Accumulator Traction on Rails and Ordinary Roads 26 688****——, Reply to Discussion on the Above Paper 26 76**

	VOL.	PAGE
Epstein [<i>Discussion</i>], High-Voltage Lamps	25	281
———, Obituary Notice of	29	950
Escher Wyss & Co., Visit to Works of	29	200
Esson, W. B.—		
[<i>Discussion</i>] Alternate Currents	21	262
„ Alternating Current Induction Motor	29	845
„ Capacity in Alternate-Current Working	30	436
„ Distant Electric Power Transmission	29	664
„ Dynamos	26	588
„ Electric Light for Railway Purposes	24	356
„ ——— Lighting of the City of London	23	185
„ Electrical Distribution by the Newcastle-on-Tyne Company	21	499
„ Instrument for Measuring Permeability of Iron and Steel	30	942
„ Magnetic Tester for Measuring Hysteresis in Sheet Iron	24	420
„ Polyphase Sub-station Machinery	30	758
„ Relative Size, Weight, and Price of Dynamo- electric Machines	26	165, 171
„ Reversible Regenerative Armatures and Short Air- space Dynamo	24	155
„ Rotatory Converters	27	702
„ Specification of Insulated Conductors	21	226
„ Standardisation of Electrical Engineering Plant	29	319, 334
„ Storage Batteries Controlled by Reversible Boosters	30	1084
„ Utilisation of Water Power	25	550
Everett, W. H.—		
[<i>Discussion</i>] Frictionless Motor Meter	29	769
„ Registration of Small Currents	27	573
Evershed, S.—		
[<i>Papers</i>] A Frictionless Motor Meter	29	743, 790
„ Telegraphy by Magnetic Induction	27	852
[<i>Discussion</i>] Alternate-Current Transformers	21	705, 708
„ Alternate Currents	21	238
„ Dynamos	26	610
„ Electrical Equipment of Ships of War	29	603
„ Electrical Transmission of Power from Niagara	22	591
„ Frictionless Motor Meter [<i>Reply</i>]	29	790
„ Influence of Shape of Applied Potential Difference Wave on the Iron Losses of Transformers	25	508
„ Instrument for Measuring Permeability of Iron and Steel	30	941
„ Magnetic Space Telegraphy... ..	27	887, 924, 963
„ Propagation of Magnetisation in Iron	24	209
„ Registration of Small Currents	27	564
„ Reversible Regenerative Armatures, and Short Air- space Dynamos	24	173
„ Standardisation of Electrical Engineering Plant	29	322
„ Watt-Hour Meter	30	960
„ Wireless Telegraphy	28	294
„ Wiring Rules	28	212
———, Award of Paris Electrical Exhibition Premium to (1900)	29	863

	VOL.	PAGE
Ewing, J. A. [<i>Paper</i>], Magnetic Balance for Workshop Tests of Permeability	27	526
———, in Reply to the Discussion on this Paper	27	543
——— [<i>Paper</i>], Magnetic Tester for Measuring Hysteresis in Sheet Iron	24	398
———, Reply to Discussion on this Paper	24	424
———, Award of Paris Electrical Exhibition Premium (1895)	24	621
Exchanges, Telephone, and their Working (<i>Dane Sinclair</i>). [See <i>Telephone</i>]	25	300
Exhibition, Paris. [See <i>Paris</i> .]		
Experimental Researches on Alternate-Current Transformers (<i>J. A. Fleming</i>). [See <i>Transformers</i>]... ..	21	594
——— Investigations of Alternate Currents (<i>A. Siemens</i>). [See <i>Alternate</i> -]	21	164
Exploder, Dynamo (Boer), Presentation of, to Institution, by Lieut-Col. R. E. Crompton... ..	30	39

F.

Factories, Polyphase Equipment of (<i>W. Wyld</i>)	30	986
Fairfax, J. S. [<i>Discussion</i>], New Form of Portable Photometer	22	211
Falconar, O. L.—		
[<i>Discussion</i>], Supersession of Steam by Electric Locomotives	30	195
„ Wiring Rules... ..	30	1154
Falconer, A. C. [<i>Discussion</i>], Problems of Commercial Electrolysis	21	558, 564, 583
Falkenstein, Conrad K. [<i>Paper</i>], Influence of Electricity in Tanning Operations	22	225
[<i>Discussion</i>] Problems of Commercial Electrolysis	21	548
Fault Testing in Telegraph Cables, (<i>G. K. and G. B. Winter</i>)	22	348
Fawcus, W. P. J. [<i>Discussion</i>], Wiring Rules	28	237
Feeder Machines (<i>Reginald Wood</i>)	27	637
Feeders, Return, for Electric Tramways (<i>A. P. Trotter</i>). [See <i>Tramways</i>]	27	457
Ferranti, S. Z. de—		
[<i>Discussion</i>] Alternating-Current Induction Motor	29	844
„ Cost of Steam Raising and of Electrical Energy	29	77
„ Distant Electric Power Transmission	29	660
„ Electric Traction and Tramways	23	735
„ Electrical Transmission of Power from Niagara	22	583
„ Electrolytic Centrifugal Process for Production of Copper Tubes	29	280
„ Frictionless Motor Meter	29	782
„ Insulation on Cables	30	690
„ Magnetic Tester for Measuring Hysteresis in Sheet Iron	24	419
„ Polyphase Sub-station Machinery	30	757
„ Relative Advantages of Alternating and Continuous Current Electricity Supply	30	3
„ Report of Swiss Visit... ..	29	243
„ Standardisation of Electrical Engineering Plant	29	312

	VOL.	PAGE
Festing, General [<i>Discussion</i>], Light of the Electric Arc	21	385
Field, M. B. [<i>Paper</i>], Method of Compensating Voltmeters for Voltage-drop in Long Feeders. [Glasgow Local Section]	30	567
[<i>Discussion</i>] Alternating-Current Induction Motor	29	836
" Compensating Voltmeters for Voltage-drop in Long Feeders (<i>Reply</i>)	30	594
" Distant Electric Power Transmission	29	669
" Induction Motor	28	356
" Polyphase Sub-station Machinery	30	753
" Report of Swiss Visit... ..	29	240
" Rotatory Converters	27	689, 694
" Supersession of Steam by Electric Locomotives	30	209
———, Award of Premium to (1901)	30	1215
Field Coils of Dynamos, Rise of Temperature in (<i>E. Brown</i>)	30	1159
Field Magnets, Winding on the; Continuous-Current Dynamos without (<i>W. B. Sayers</i>). [See <i>Sparking</i>]	22	377, 435
——— Telegraphs with the Chitral Relief Force, 1895 (<i>F. E. Dempster</i>)	25	699
Finlay, A. H. [<i>Discussion</i>], Dynamos	26	617
Fischer's Steel Works, Visit to	29	201
Fisher, W. C. [<i>Discussion</i>], Alternate-Current Measurement, &c.	30	922
Fittings, Electrical; Testing and Registration of	28	168
Fitz-Gerald, Desmond G. [<i>Paper</i>], Determination of Weight of Dilute Sulphuric Acid to be allowed for in Construction of Accumulators of which Effective Capacity, at a required Rate of Discharge, is known	25	78
[<i>Discussion</i>] Accumulator Traction	26	743
" Electrolysis of Gold	24	267
" Problems of Commercial Electrolysis	21	555
" Storage Battery Problems	29	512
Fitzgerald, G. F., Inaugural Address as Chairman of Dublin Local Section	29	394
[<i>Discussion</i>] Alternate-Current Transformers	22	2
" Dublin Corporation Electric Light Scheme	30	543
———, ———, Obituary Notice of	30	1244
———, ———, Reference to the Death of	30	510, 772
Fleming, J. A. [<i>Paper</i>], Experimental Researches on Alternate-Current Transformers. [See <i>Transformers</i>]	21	594
[<i>Discussion</i>] Alternate Currents	21	237
" Capacity in Alternate-Current Working	30	403
" Electrical Transmission of Power from Niagara	22	534
" Experimental Researches on Alternate-Current Transformers [<i>Reply</i>]	21	594
" Experiments on Alternate-Current Arcs by Aid of Oscillographs	28	457
" Hissing of the Electric Arc	28	438
" Influence of Shape of Applied Potential Difference Wave on the Iron Losses of Transformers	25	502
" Light of the Electric Arc	21	393
" Magnetic Space Telegraphy... ..	27	899
" ——— Tester for Measuring Hysteresis in Sheet Iron	24	411
" Oil as an Insulator	21	277
" Propagation of Magnetisation in Iron	24	205

	VOL.	PAGE
Fleming, J. A. (<i>continued</i>)—		
[<i>Discussion</i>] Rapid Variations in Current through Direct- Current Arc	30	271
,, Testing and Working Alternators	22	166
,, ——— the Magnetic Qualities of Iron	23	217
,, Wireless Telegraphy	28	291
Fletcher, G. E.—		
[<i>Discussion</i>] Electric Light for Railway Purposes	24	312
,, Railway Telegraphs	25	428
Forbes, George—		
[<i>Papers</i>] Distant Electric Power Transmission	29	629, 674
,, The Electrical Transmission of Power from Niagara Falls. [<i>See Power</i>]	22	448, 603
[<i>Discussion</i>] Alternate-Current Transformers	21	698
,, Aluminium as an Electrical Conductor	30	361
,, Cost of Electrical Energy	27	389
,, Distant Electric Power Transmission [<i>Reply</i>]	29	674
,, Disturbance of Submarine Cable Working by Electric Tramways	26	529
,, Electrical Transmission of Power from Niagara [<i>Reply</i>]	22	603
,, Magnetic Tester for Measuring Hysteresis in Sheet Iron	24	415
,, Oil as an Insulator	21	282
,, Parallel Working	23	301
,, Prevention and Control of Sparking	22	415, 426
,, Propagation of Magnetisation in Iron	24	210
,, Specification of Insulated Conductors, &c.	21	203
,, Supersession of Steam by Electric Locomotives	30	163
,, Award of Premium to (1900)	29	863
Foster, C. Le Neve [<i>Discussion</i>], Use of Electricity in Coal Mines	30	859
———, G. Carey [<i>Discussion</i>], Magnetic Tester for Measuring Hysteresis in Sheet Iron	24	412
French, A. H. [<i>Discussion</i>], Distant Electric Power Transmission	29	672
Frequency (High), Experiments with Alternate Currents of High Potential and (<i>Nikola Tesla</i>)	21	51
———, Standard (<i>L. B. Stillwell</i>)	28	364
———, ———, Report on, by Committee on Uniformity	28	272
Fricker, G. C. [<i>Discussion</i>], Capacity in Alternate-Current Working	30	431
Frictionless Motor-Meter (<i>S. Evershed</i>). [<i>See Meter</i>]	29	743
Frodsham, G. W. [<i>Discussion</i>], Electrical Time Service	29	147
Fuels, Cheap, Influence of, on Cost of Electrical Energy (<i>R. E. Crompton</i>)	29	62
Fuses for 200-Volt Circuits (<i>G. Byng</i>)	27	128

G.

Gadsby, C. H.—		
[<i>Discussion</i>] Cost of Electrical Energy	27	420
,, Disturbance of Submarine Cable Working by Electric Tramways	26	519, 523

F. L. S. General Discussion

F. L. S. B. Paper, Meth

Stephen Long F

Discussion Alter

Com

1

Dis

Ind

Pol

Re

R

S

Award of Po

Field Coils of Dyna

Field Magnets, Win

out (H

Telegraph

Finlay, A. H. : D

Fischer's Steel W

Fisher, W. C. : I

Fittings, Electr

Fitz Gerald, D

Sulphuric

of which

known

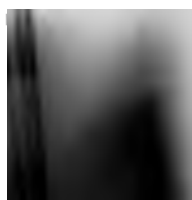
Dis

Fitzgerald

See

Fleming

C



	VOL.	PAGE
of Electrical Energy, Application of Steam Power to (<i>J. S. Raworth</i>)	30	971
— — — — — for Tramways (<i>J. S. Raworth</i>). [See <i>Tramways</i>]	26	432
— — — — —, Utilisation of Water Power, with some Examples		
nts for (<i>Alph. Steiger</i>)	25	521
ransmission and Distribution of Energy by means of Electricity at (<i>Louis Goichot</i>)	22	445
, A. H. [Paper], Registration of Small Currents used for Electric Lighting and other Purposes	27	547, 578
W.—		
[Discussion] Aluminium as an Electrical Conductor	30	362
„ Electrolytic Centrifugal Process for Production of Copper Tubes	29	282
„ Registration of Small Currents [Reply]	27	578
rank [Discussion], Telephone Switch-Board	24	78
ie, M. M. [Discussion], Alternate-Current Measurement, &c. ...	30	923
one, J. H., and Walter Hibbert [Paper], Cause of the Changes of Electro-motive Force in Secondary Batteries. [See <i>Batteries</i>]	21	412
— — — — —, Reply to Discussion on the above Paper	21	461
ow Local Section, Creation of (1899)	29	118
— — — — —, Discussion, Supersession of Steam by Electric Locomotive	30	198
— — — — —, Electricity Supply (<i>W. A. Chamen</i>). [See <i>Electricity</i>]	30	105
— — — — —, Method of Compensating Voltmeters for Voltage-drop in Long Feeders (<i>M. B. Field</i>). [See <i>Voltmeters</i>]	30	567
— — — — —, Method of Charging for Public Supply of Electricity (<i>W. W. Lackie</i>). [See <i>Charging</i>]	29	678
— — — — —, Resolution of Condolence with the King on the Death of Her Majesty Queen Victoria	30	394
— — — — —, Some Considerations Concerning Electric Driving (<i>H. A. Mavor</i>). [See <i>Driving</i>]	29	889
— — — — —, Vote of Congratulation to the Electrical Engineers, R.E.	30	217
Glazebrook, R. T.—		
[Discussion] Alternate-Current Measurement, &c.	30	913
„ Aluminium as an Electrical Conductor	30	358
Goichot, Louis [Paper], Transmission and Distribution of Energy by means of Electricity at Genoa	22	445
Gold, Electrolysis of (<i>N. S. Keith</i>). [See <i>Electrolysis</i>]	24	236
Goldstone, C. [Discussion], Railway Telegraphs	25	413
Goodchild, W. C. [Discussion], Apparatus for 200-Volt Circuits ...	27	195
Goodenough, H. T. [Discussion], Electrically Interlocking Railway Signals	26	145
Goodsall, Captain [Discussion], Repairs to the South American Company's Cable	26	277, 288
Goolden, W. T., Demonstration of Stelje's Type-printing Telegraph ...	30	103
Gott, A. E. [Discussion], Wiring Rules	30	1151
Gott, D. W., Obituary Notice of	28	675
Governors, Effect of, on Parallel Running of Alternators (<i>L. Wilson</i>) ...	28	389
Goody, S. H. [Discussion], Wiring Rules	30	1155

	VOL.	PAGE
Gramme, Z. T., Address and Testimonial to	27	148, 439
Grant, S. S., Award of Students' Premium to (1897) ..	26	719
Granville, W. P.—		
[Discussion], Best Resistance for Receiving Instrument on Leaky		
Telegraph Line	23	370
,, Magnetic Space Telegraphy	27	938
,, Wireless Telegraphy	28	295, 304
Grave, L. de [Discussion], Use of Electricity in Coal Mines ...	30	869
Graves, Edward (Honorary Treasurer) Announcement of the Death of	21	541
Gray, A. [Discussion], Electric Driving	29	898
——, R. K. [Discussion], Repairs to the South American Company's		
Cable	26	283
——, W. E.—		
[Discussion] Capacity in Alternate-Current Working	30	420
,, Cost of Electrical Energy	23	538
,, Oil as an Insulator	21	273
,, Specification of Insulated Conductors, &c.	21	198, 225
Great Britain, Telephone Trunk Line System in (<i>J. Gavey</i>). [See		
<i>Telephone</i>]	25	624
Griffin, J. D., Award of Salomons Scholarship to (1901)	30	1215
Grimshaw, C. O.—		
[Discussion] Apparatus for 200-Volt Circuits	27	186
,, Cost of Electrical Energy	27	391
Grindle, G. A. [Paper], Use of Storage Batteries in Connection with		
Electric Tramways [Manchester Local Section].		
[See <i>Batteries</i>]	30	1098
——, —— [Discussion], Storage Batteries controlled by Reversible		
Boosters	30	1077
Grove, C. E.—		
[Paper] Electrical Equipment of Ships of War	29	530, 621
[Discussion] Design of Electric Railway Motors	27	626
,, Electrical Equipment of Ships of War [<i>Reply</i>]	29	621
,, Electric Locomotives	28	610
,, Electric Traction Appliances	26	405
,, Electrolytic Process for the Manufacture of Para-		
bolic Reflectors	27	109
,, Generation of Electrical Energy for Tramways ...	26	483
,, Standardisation of Electrical Engineering Plant ...	29	331
——, ——, Award of Institution Premium to (1900)	29	863
——, ——, Obituary Notice of	30	1246
Gun-working Mechanisms, for Use on Ships of War (<i>C. E. Grove</i>) ...	29	590
Guy, A. F. [Discussion], Training of Electrical Engineers	30	788

H.

Hadfield, R. A. [Discussion], Magnetic Balance for Tests of Permea-		
bility	27	539
Hall, Cuthbert—		
[Discussion] Accumulator Traction	26	706
,, Oil as an Insulator	21	279, 281

	VOL.	PAGE
Halpin, Druitt—		
[Discussion] Cost of Electrical Energy	23	526
,, Single-Acting High-Speed Engine	24	502
Hamilton, F. A. [Paper], Repairs to Submarine Cables	22	243
Hammer, W. J. [Discussion], Telegraphs and Telephones at the Paris Exhibition	30	95
Hammond, R.—		
[Papers] Cost of Generation and Distribution of Electrical Energy. [See Cost]	27	246, 432
,, Dublin Corporation Electric Light Scheme [Dublin Local Section]	30	540
[Discussion] Cost of Electrical Energy	23	490
,, Cost of Electrical Energy [Reply]	27	432
,, Distant Electric Power Transmission	29	665
,, Dublin Corporation Electric Light Scheme [Reply]	30	544
,, Electrical Power Bills of 1900	30	514
,, Instrument for Measuring Permeability of Iron and Steel	30	942
,, Report of Swiss Visit	29	229
,, Standardisation of Electrical Engineering Plant... ..	29	311
,, Supersession of Steam by Electric Locomotive	30	160
,, Watt-Hour Meter	30	962
———, ———, Award of Paris Electrical Exhibition Premium to (1898)	28	638
Hampson, Stuart [Discussion], Railway Telegraphs	25	426
———, R. S., Obituary Notice of	28	675
Handcock, H. W.—		
[Discussion] Electric Wiring	25	33
,, High-Voltage Lamps	25	282
Harrison, F. [Discussion], Apparatus for 200-Volt Circuits	27	197
———, H. E. [Discussion], Testing and Working Alternators	22	174
———, H. T.—		
[Discussion] Accumulator Traction	26	764
,, Electrical Time Service	29	143
Hartnell, W. [Discussion], Magnetic Balance for Tests of Permeability	27	540
Hawes, F. B. O.—		
[Discussion] Telephone Exchanges	25	367
,, Telephone Switch-Board	24	64
Hawkins, C. C.—		
[Discussion] Dynamos	26	603
,, Magnetic Balance for Tests of Permeability	27	541
,, Reversible Regenerative Armatures and Short Air-Space Dynamos	24	158
———, ———, Award of Premium to (1900)	29	863
———, ———, and R. Wightman [Paper], The Air-Gap Induction in Continuous-Current Dynamos	29	436
Haycraft, H. C. [Discussion], Alternate-Current Transformers	22	19
Head, Jeremiah [Discussion], Single-Acting High-Speed Engine	24	512
Heating Apparatus for 200-Volt Circuits (G. Byng)	27	135
Heaviside, A. W.—		
[Paper] Inaugural Address as Chairman of Newcastle Local Section	28	800

	VOL.	PAGE
Heaviside, A. W. (<i>continued</i>)—		
[<i>Discussion</i>] Electric Tramways	27	467
,, Electrical Distribution by Newcastle Electric Supply Company [<i>Reply</i>]... ..	21	501
,, Electrically-driven Machine Tools	30	564
,, Supersession of Steam by Electric Locomotives ...	30	196, 197
,, Telegraphs and Telephones at the Paris Exhibition	30	97
——, ——, Award of Fahie Premium to (1892)	21	718
——, ——, and R. C. Jackson [<i>Paper</i>], Electrical Distribution by the Newcastle-on-Tyne Electric Supply Company, Limited. [<i>See Distribution</i>]	21	475
Henwood, E. N. [<i>Discussion</i>], Cost of Electrical Energy	23	508
Hering, C., In Opening Meeting in Paris (1900)	30	1
——, ——, Notice of Electric Light and Electro-chemical Exhibits in Paris Exhibition	30	34
Herroun, E. F. [<i>Discussion</i>], Electro-chemical Treatment of Ores ...	27	69
Hewlett, E. H. [<i>Discussion</i>], Storage Batteries and Reversible Boosters	30	1090
Hibbert, Walter, and J. H. Gladstone, Cause of the Changes of Electro-motive Force in Secondary Batteries. [<i>See Batteries</i>] ...	21	412
[<i>Discussion</i>] Cause of Changes of E.M.F. in Secondary Batteries [<i>Reply</i>]	21	458
,, Storage Battery Problems	29	503
Higgins, F. [<i>Paper</i>], Some Advantages of Connecting the Coils of Electro-Magnets in Multiple Arc	22	362
——, —— [<i>Discussion</i>], Universal Shunt Box for Galvanometers	23	325
Highfield, J. S. [<i>Paper</i>], Storage Batteries in Electric Power Stations controlled by Reversible Boosters. [<i>See Batteries</i>] ...	30	1040
——, ——, Reply to Discussion on this Paper	30	1090
——, ——, Award of Premium to (1901)	30	1215
High-Speed, Single-Acting Engine for Central-Station Work, Recent Development of (<i>Mark Robinson</i>). [<i>See Engine</i>]	24	434
Hird, W. B. [<i>Paper</i>], Reluctance of the Teeth in a Slotted Armature	29	933
Hirst, H.—		
[<i>Discussion</i>] Power Bills of 1900	30	529
,, Registration of Small Currents	27	570
,, Watt-Hour Meter	30	963
,, Wiring Rules	28	189
——, ——, Vote of Congratulation to Electrical Engineers, R.E.	30	304
Hiss, F. J. (jun.), Award of Students' Premium to (1901)	30	1215
Hissing of Direct-Current Arc (<i>W. Duddell</i>)	30	244
—— the Electric Arc (<i>Mrs. H. Ayrton</i>). [<i>See Arc</i>]	28	400
Hoadley, E., Award of Salomons Scholarship to (1894)	24	2
Hobart, H. M.—		
[<i>Discussion</i>] Rotatory Converters	27	706
Holden, F.—		
[<i>Paper</i>] Watt-Hour Meter. [<i>See Meter</i>]	30	944
——, ——, Reply to Discussion on this Paper	30	967
——, ——, Award of Premium to (1901)	30	1215
Holiday, R. [<i>Discussion</i>], Use of Electricity in Coal Mines	30	863
Holliday, John [<i>Paper</i>], Cost of Steam Raising... ..	29	38
——, ——, Reply to Discussion on this Paper	29	114
Hollins, F. T.—		
[<i>Paper</i>] Electrically Interlocking the Block and Mechanical Signals on Railways	26	37, 149

	VOL.	PAGE
Hollins, F. T. (<i>continued</i>)—		
[<i>Discussion</i>] Electric Intercommunication in Railway Trains...	27	784
,, Electrically Interlocking Railway Signals [<i>Reply</i>]	26	149
,, Railway Telegraphs	25	422
Holmes, A. Bromley [<i>Discussion</i>], Cost of Electrical Energy	23	534
———, J. H. [<i>Discussion</i>], Supersession of Steam by Electric Loco- motive... ..	30	195
———, P. [<i>Discussion</i>], Telephone Switch-Board	24	74
Hooper, J. P. [<i>Discussion</i>], Specification of Insulated Conductors, &c.	21	227
Hope-Jones, F. [<i>Paper</i>], Electrical Time Service	29	119
———, Reply to Discussion on this Paper	29	151, 287
Hopkins, C. J., Award of David Hughes Scholarship to (1901)	30	1215
Hopkinson, E. [<i>Discussion</i>], Training of Electrical Engineers... ..	30	790
———, John—		
[<i>Paper</i>] Inaugural Address as President	25	6
[<i>Discussion</i>] High-Voltage Lamps	25	284
,, Propagation of Magnetisation in Iron [<i>Reply</i>]	24	212
,, Testing and Working Alternators	22	169
———, ———, Formation of Corps of Electrical Engineer Volunteers	25	4
———, ———, Obituary Notice of	28	676
———, ———, Reference to Death of	27	646, 691
———, ———, and E. Wilson [<i>Paper</i>], Propagation of Magnetisation in Iron	24	194
Hosack [<i>Discussion</i>], Electrolytic Process for the Manufacture of Parabolic Reflectors	27	110
Hospitalier, E., Notice of Exhibits Illustrating Mechanical Production and Utilisation of Electricity in Paris Exhibition	30	26
Housman, R. H.—		
[<i>Discussion</i>] Alternate Currents	21	285
,, Polyphase Equipment of Factories... ..	30	1015
,, Prevention and Control of Sparking, &c.	22	399
Howard, A. H. [<i>Discussion</i>], Wiring Rules	28	178
———, ———, Report of Committee on Copper Conductors	29	169
———, Ebenezer [<i>Discussion</i>], The Electrical Power Bills of 1900	30	533
Howgrave-Graham, R. P., and M. R. Gardner [<i>Students' Paper</i>], Synchronising of Alternators	28	658
———, ———, Award of Salomons Scholarship to (1900)	29	663
———, ———, Award of Students' Premium to (1899)	28	639
———, ———, Award of Students' Premium to (1900)	29	86
Hoy, H. A. [<i>Discussion</i>], Supersession of Steam by Electric Loco- motive	30	154, 162
Huber, Colonel P. E., Letter of Thanks from	29	2
Hudleston, F. [<i>Discussion</i>], Supersession of Steam by Electric Locomotive	30	166
Hudson, J. G. [<i>Discussion</i>], Single-Acting High-Speed Engine	24	522
Hughes, D. E. [<i>Paper</i>], Oil as an Insulator. [See <i>Oil</i>]	21	244
———, ——— [<i>Discussion</i>], Best Resistance for Receiving Instrument and Leaky Telegraph Time	23	370
———, ———, Oil as an Insulator [<i>Reply</i>]	21	289
———, ———, Testing the Magnetic Qualities of Iron	23	209
———, ———, Obituary Notice of	29	951
———, ———, Reference to Death of	20	240
——— [David] Scholarship, Announcement of Foundation	20	288

	VOL.	PAGE
Hughes [David] Scholarship. [See <i>David</i> .]		
Human, H. —		
[<i>Discussion</i>] Electric Wiring	25	146
" Wiring Rules	28	184
Humming of Direct-Current Arc (<i>W. Duddell</i>)	30	243
Humphrey, H. A. [<i>Discussion</i>], Supersession of Steam by Electric Locomotive	30	181
Humphreys, H. J., Award of Students' Premium to (1900)	29	863
Humphries, R. [<i>Discussion</i>], Dublin Corporation Electric Light Scheme	30	543
Hunt, H. F. [<i>Discussion</i>], Registration of Small Currents	27	575
Hunter, W. D. [<i>Discussion</i>], Cost of Electrical Energy... ..	23	536
Huskisson, W. [<i>Discussion</i>], Cost of Steam Raising and of Electrical Energy	29	108
Hysteresis, Magnetic Tester for Measuring, in Sheet Iron (<i>J. A. Ewing</i>). [See <i>Tester</i>]	24	398

I.

Inaugural Address of Chairman of Birmingham Local Section, 1901 (<i>O. Lodge</i>)	30	796
————— Calcutta Local Section, 1901 (<i>F. G. Maclean</i>)	30	979
————— Dublin Local Section, 1900 (<i>G. F. Fitzgerald</i>)	29	394
————— Newcastle Local Section, 1900 (<i>A. W. Heaviside</i>)	29	900
————— the President, 1892 (<i>W. F. Ayrton</i>)	21	5
—————, 1895 (<i>R. E. Crompton</i>)	24	4
—————, 1896 (<i>John Hopkinson</i>)... ..	25	6
—————, 1897 (<i>Sir Henry Mance</i>)	26	8
—————, 1900 (<i>John Perry</i>)	30	43
—————, 1893 (<i>Sir W. H. Preece</i>)	22	36
—————, 1894 (<i>Alexander Siemens</i>)	23	5
—————, 1898 (<i>J. W. Swan</i>)	27	8
—————, 1899 (<i>Silvanus P. Thompson</i>)... ..	29	14
India, Earth Currents in (<i>E. O. Walker</i>). [See <i>Earth</i>]	22	214
—————, A New Danger to which Underground Wires are exposed in (<i>P. V. Luke</i>)	22	146
Induction, Air-Gap and Interpolar (<i>F. W. Carter</i>)	29	925
—————, Air-Gap in Continuous-Current Dynamos (<i>C. C. Hawkins and R. Wightman</i>)	29	436
—————, Magnetic, Telegraphy by (<i>S. Evershed</i>)	27	852
Induction Motor, The (<i>Ernest Wilson</i>)	28	321
<i>Discussion</i> :— Field, M. B., 356; Mordey, W. M., 356; Wilson, E. (in reply), 361.		
Induction Motors, Alternating Current (<i>A. C. Eborall</i>). [See <i>Motors</i>]	29	799
Influence of Cheap Fuels on the Cost of Electrical Energy (<i>R. E. Crompton</i>). [For <i>Discussion</i> , see <i>Cost of Steam Raising</i>]	29	62

	VOL.	PAGE
Influence of Electricity in Tanning Operations (<i>Conrad K. Falkenstein</i>)	22	225
Institute (American) of Electrical Engineers. [See <i>American</i> .]		
Institution of Electrical Engineers, Growth of	29	33, 34
Institution Wiring Rules (<i>R. E. Crompton</i>)	28	173
Discussion : (with discussion on Mr. Pigg's and Mr. Wordingham's Papers; see <i>Rules</i>).		
Instrument for Measuring Permeability of Iron and Steel (<i>C. G. Lamb and M. Walker</i>). [See <i>Permeability</i>]	30	930
Insulated Conductors for Electric Lighting and other Purposes, Specification of : Supplementary Remarks on (<i>Sir W. H. Preece</i>). ...	21	185
Insulation Testing of Telegraph Lines, Daily (<i>Sir W. H. Preece</i>) ...	24	546
Insulation on Cables (<i>M. O'Gorman</i>)... ..	30	608
———, Index to Paper	30	682
Discussion :—Addenbrooke, G. L., 689; Bright, C., 686; Ferranti, S. Z. de, 690; Jacob, F., 684; Kingsbury, J. E., 689; O'Gorman, M. (in reply), 696; Raphael, F. C., 693; Russell, S. A., 695; Scott, E. K., 692; Swinburne, J., 684.		
Insulation Resistance of Dielectrics	30	666
Insulator, Oil as an (<i>D. E. Hughes</i>). [See <i>Oil</i>]... ..	21	244
Intercommunication, Electric, in Railway Trains (<i>W. Langdon</i>). [See <i>Railway</i>]	27	741
Interruptions to Electricity Supply, The Prevention of (<i>L. Andrews</i>). [See <i>Supply</i>]	27	487
Intermittent Arc (<i>W. Duddell</i>)	30	247
Ionides, P. D. [Discussion], Electricity Supply	30	118
Ireland, T. [Discussion], Electrically Interlocking Railway Signals ...	26	137
Iron Losses of Transformers, Influence of Shape of Applied Potential Difference Wave on the (<i>Beeton, Taylor, and Barr</i>). [See <i>Transformers</i>]	25	474
Iron, Magnetic Qualities of, Methods of Testing (<i>Gisbert Kapp</i>)	23	199
Discussion :—Fleming, J. A., 217; Hughes, D. E., 209; Kapp, Gisbert (in reply), 229; Mordey, W. M., 223; Perry, J., 220; Ravenshaw, H., 227; Siemens, A. (President), 227; Sparks, C. P., 219; Steele, L. J., 214; Thompson, S. P., 210.		
Iron, Permeability-Tester for (<i>C. G. Lamb and M. Walker</i>). [See <i>Permeability</i>]	30	930
———, Propagation of Magnetisation in (<i>J. Hopkinson and E. Wilson</i>). [See <i>Magnetisation</i>]	24	194
———, Sheet, Magnetic Tester for Measuring Hysteresis in (Professor Ewing). [See <i>Tester</i>]	24	398

J.

Jackson, R. C., Award of Fahie Premium to (1892)	21	718
———, ———, and A. W. Heaviside, Electrical Distribution by the Newcastle-on-Tyne Electric Supply Company, Limited. [See <i>Distribution</i>]	21	475
———, Col. R. R., Obituary Notice of	28	678

	VOL.	PAGE
Jacob, F. [<i>Discussion</i>], Insulation on Cables	30	684
Jamieson, A.—		
[<i>Discussion</i>] Calculation of Distributing Systems of Electric Traction	29	729
,, Compensating Voltmeters for Voltage-drop in Long Feeders	30	591
,, Dynamos	26	605
Jarman, A. J. [<i>Discussion</i>], Load Diagrams of Electric Tramways, &c.	21	332
Jenkin, Bernard M.—		
[<i>Discussion</i>] Calculation of Distributing Systems of Electric Traction	29	733
,, Electric Traction and Tramways	23	749
Jenkins, H. C. [<i>Discussion</i>], Electro-chemical Treatment of Ores ...	27	74
——, R. [<i>Discussion</i>], Magnetic Balance for Tests of Permeability...	27	541
Johnson, E. H. [<i>Discussion</i>], Standardisation of Electrical Engineering Plant... ..	29	307
——, W. C. [<i>Discussion</i>], Oil as an Insulator	21	269, 288
Johnston, F., Award of Students' Premium to (1897)	26	719
Jones, Dr. H. Lewis [<i>Paper</i>], Application of Electricity in Medical and Surgical Practice	29	346
——, ——, Reply to Discussion on this Paper	29	378
——, Ll. Atherley [<i>Discussion</i>], Electrical Power Bills of 1900 ...	30	503
Joyce, S. [<i>Discussion</i>], Training of Electrical Engineers	30	792
Jungfrau Electric Railway, Visit to	29	222

K.

Kander Power-House (Spiez), Visit to	29	212
Kapp, G. [<i>Paper</i>], Method of Testing the Magnetic Qualities of Iron	23	199, 299
[<i>Discussion</i>] Alternate-Current Transformers	21	702
,, Distribution of Power by Alternate-Current Motors	22	315
,, Dynamos	26	611
,, Electric Lighting of the City of London	23	184
,, Electrical Transmission of Power from Niagara	22	555
,, Oil as an Insulator	21	281
,, Parallel Working	23	284
,, Testing and Working Alternators	22	171
,, Testing Magnetic Qualities of Iron [<i>Reply</i>]	23	229
,, Use of Electricity in Coal Mines	30	856
,, Utilisation of Schaffhausen Water-Power... ..	29	184
Keith, N. S. [<i>Paper</i>], Electrolysis of Gold. [See <i>Electrolysis</i>] ...	24	236, 271
[<i>Discussion</i>] Electric Traction and Tramways	23	696
,, Electrolysis of Gold [<i>Reply</i>]	24	271
,, Trip to the United States, 1893	23	86
Kelvin, Lord—		
[<i>Discussion</i>] Dynamos	26	610
,, Electricity Supply	30	118

	VOL.	PAGE
Kelvin, Lord, Address of Congratulation to, on the Occasion of the Jubilee of his Professorship in the University of Glasgow	25	620
———, ———, Letter from, in Acknowledgment of above Address ...	25	621
———, ———, Election of, as Honorary Member (1899)	28	120
Kempster, J. W. [<i>Discussion</i>], Distant Electric Power Transmission ...	29	673
Kennedy, A. B. W.—		
[<i>Discussion</i>] Alternate-Current Transformers	22	27
„ Cost of Electrical Energy	23, 521	396
———, Capt. J. N. C. [<i>Discussion</i>], Wireless Telegraphy	28	296
Kennelly, A. E. [<i>Discussion</i>], Relative Advantages of Alternating- and Continuous-Current Electricity Supply	30	9
Kenny, T. R. D. [<i>Discussion</i>], Supersession of Steam by Electric Locomotive	30	182
Kershaw, J. B. C., Use of Aluminium as an Electrical Conductor, with New Observations upon the Durability of Aluminium and other Metals under Atmospheric Exposure	30	348
———, ———, Reply to Discussion on this Paper	30	363
King, Resolutions of Condolence and Loyalty passed on the Occasion of the Death of Her Majesty Queen Victoria	30	393, 394
King, Frank, Obituary Notice of	29	955
Kingsbury, J. E. [<i>Paper</i>], The Origin and Development of the Telephone Switch-board	24	36, 80
[<i>Discussion</i>] Insulation on Cables	30	689
„ Standardisation of Electrical Engineering Plant ...	29	336
„ Telegraphs and Telephones at the Paris Exhibition ...	30	99
„ Telephone Exchanges	25	350
„ Telephone Switch-board [<i>Reply</i>]	24	80
„ Telephone Trunk Line System in Great Britain ...	25	657
———, ———, Award of Fahie Premium to (1895)	24	628
Kingsford, H. H. [<i>Paper</i>], Note on Duplexing Cables	30	1020
Knox, Vesey [<i>Discussion</i>], Electrical Power Bills of 1900	30	497
Kolle, H. W. [<i>Discussion</i>], Distribution of Power by Alternate-Current Motors	22	335
Korda, D. [<i>Discussion</i>], Relative Advantages of Alternating- and Continuous-Current Electricity Supply	30	14
Kruesi, J., Obituary Notice of	28	678

L.

Lackie, W. W. [<i>Paper</i>], Method of Charging for Public Supply of Electricity. [Glasgow Local Section]	29	678, 689
[<i>Discussion</i>] Charging for Electricity Supply [<i>Reply</i>]	29	689
„ Supersession of Steam by Electric Locomotive ...	30	208
Lamb, C. G. and M. Walker [<i>Paper</i>], An Instrument for Measuring the Permeability of Iron and Steel. [See <i>Permeability</i>]	30	930
———, ———, Reply to Discussion on this Paper	30	944

	VOL.	PAGE
Lamps and other Apparatus for 200-Volt Circuits, Manu-		
of (<i>G. Binswanger-Byng</i>)	27	118
Discussion:—Addenbrooke, G. L., 186; Baynes, S., 196; Binswanger-Byng, G. (in reply), 200; Boot, H. L. P., 137; Crompton, R. E., 137, 159; Dykes, A. H., 192; Gaster, L., 168; Geipel, W., 179; Goodchild, W. C., 195; Grimshaw, C. O., 186; Harrison, F., 197; Miller, H. W., 172; Mordey, W. M., 139; Rawlings, W. R., 166; Raworth, J. S., 143; Robertson, C. J., 143, 174; Rose, T. A., 192; Scott, E. K., 191; Shoolbred, J. N., 144; Stearn, C. H., 149; Swan, J. W. (President), 136, 187; Swinburne, J., 161; Swinton, A. A. Campbell, 171; Thompson, S. P., 183; Wordingham, C. H., 164.		
Lamps, High-Voltage, and their Influence on Central Station		
Practice (<i>G. L. Addenbrooke</i>)	25	195
Discussion:—Addenbrooke, G. L. (in reply), 290; Baynes, Sydney, 286; Epstein, L., 281; Geipel, W., 278; Handcock, H. W., 282; Hopkinson, J. (the President), 234; Patchell, W. H., 282; Rawlings, W. R., 284; Robertson, C. J., 278; Rose, T. A., 276; Snell, J. F. C., 277; Stearn, C. H., 271; Swan, J. W., 268; Swinton, A. A. Campbell, 281.		
Lamps, Miner's, Safety, Electrical (<i>S. F. Walker</i>). [See <i>Miners</i>] ...	30	815
Langdon, W. E.—		
[<i>Papers</i>] Electric Intercommunication in Railway Trains ...	27	741, 788
,, Employment of the Electric Light for Railway Purposes	24	278, 321, 358
,, Railway Telegraphs, with Special Reference to Recent Improvements	25	380, 440
,, Supersession of the Steam by the Electric Loco- motive	30	124, 198, 218
[<i>Discussion</i>] Electric Intercommunication in Trains [<i>Reply</i>] ...	27	788
,, Electric Light for Railway Purposes [<i>Reply</i>] ...	24	321, 358
,, Electric Wiring	25	43
,, Electrically Interlocking Railway Signals ...	26	83, 116
,, Railway Telegraphs [<i>Reply</i>]	25	440
,, Supersession of Steam by Electric Locomotive [<i>Reply</i>]	30	198, 218
,, Telephone Switch-Board	24	61
Langdon-Davies, W. [<i>Discussion</i>], Alternating-Current Induction Motor	29	839
Langridge, L. J. [<i>Discussion</i>], Wiring Rules	28	186
Latimer, F. D. [<i>Discussion</i>], Telephone Switch-board	24	76
Lawson, A. J.—		
[<i>Discussion</i>] Cost of Electrical Energy	27	413
,, Cost of Steam Raising and of Electrical Energy... ..	29	102
,, Electric Traction by Surface Contacts	28	262
,, Electric Tramways	27	468
,, Electrical Equipment of Ships of War	29	613
,, Generation of Electrical Energy for Tramways ...	26	489
,, Prevention of Interruptions to Electricity Supply... ..	27	510
,, Rotatory Converters	27	711
,, Supersession of Steam by Electric Locomotive ...	30	171
<i>See W. B. [Discussion], Electric Traction and Tramways</i>	23	725

	VOL.	PAGE
Lea, H., in Reference to Creation of Birmingham Local Section ...	30	795
———, ——— [Discussion], Polyphase Equipment of Factories ...	30	1017
Leach, H. L.—		
[Discussion] Polyphase Sub-station Machinery ...	30	763
„ Wiring Rules ...	28	219
Leake, H. C. [Discussion], Polyphase Sub-station Machinery ...	30	764
Leaky Telegraph Line, Best Resistance for the Receiving Instrument on (<i>W. E. Ayrton</i> and <i>C. S. Whitehead</i>). [See <i>Telegraph</i>] ...	23	327
Lees, C. H. [Discussion], Training of Electrical Engineers ...	30	789
Legislation, Electrical, Committee on ...	30	930, 1221
Lemon, C., Obituary Notice of ...	30	1247
Leonard, W.—		
[Discussion] Electric Light for Railway Purposes ...	24	325
„ Intercommunication in Railway Trains ...	27	778
„ Electrically Interlocking Railway Signals ...	26	147
„ Railway Telegraphs ...	25	427
Levin, A. E.—		
[Discussion] Report of Swiss Visit... ..	29	251
„ Standardisation of Electrical Engineering Plant ...	29	329
Lewis, J. Slater [Discussion], Standardisation of Electrical Engineering Plant ...	29	306
Library, Report as to. [See <i>Annual Report</i> .]		
Light, Electric, Dublin Corporation Scheme (<i>R. Hammond</i>). [See <i>Dublin</i>] ...	30	540
Light, Electric, Employment of, for Railway Purposes (<i>W. Langdon</i>) ...	24	278
Discussion:—Albright, J. F., 323; Chamen, W. A., 341; Crompton, R. E. (President), 311, 357; Dowson, J. Emerson, 352; Esson, W. B., 356; Fletcher, G. E., 312; Langdon, W. (in reply), 321, 358; Leonard, W., 325; Manville, E., 327; Mordey, W. M., 349; Preece, A. H., 347; Preller, C. Du Riche, 314; Raworth, J. S., 321; Sankey, Captain, 333; Shoolbred, J. N., 351; Siemens, Alexander, 341; Trotter, A. P., 335; Webb, F. W., 353; Weekes, R. W., 331.		
Light, Electric, in Paris Exhibition, Notice of Exhibits by Carl Hering ...	30	84
——— of Direct-Current Arc, Effect of Current-Variation (<i>W. Duddell</i>)	30	235
——— of the Electric Arc, Notes on the (<i>A. P. Trotter</i>). [See <i>Notes</i>]	21	360
Lighting and Power Stations, Swiss, Visits to ...	29	197
Lighting, Electric, of the City of London (<i>Major-General</i> <i>C. E. Webber</i>) ...	23	120
Discussion:—Albright, J. F. 188; Braithwaite, J. B., 187; Crompton, R. E., 191; Dale, D. R., 183; Esson, W. B., 185; Kapp, Gisbert, 184; Siemens, Alexander (the President), 185; Tasker, Howard, 183; Thompson, S. P., 190; Webber, General (in reply), 194.		
Lighting, Electric, of Ships of War (<i>C. E. Grove</i>) ...	29	538
———, ———, Registration of Small Currents used for (<i>A. H. Gibbings</i>) [See <i>Registration</i>] ...	27	547
Lightning on the Telegraph Line in India, Case of (<i>P. V. Luke</i>) ...	23	781
Lindley [Discussion], Direct-Current <i>versus</i> Three-phase Distribution... ..	30	323
• Line (<i>Telegraph</i>), <i>Leaky</i> , The Best Resistance for the Receiving Instru- ment on a (<i>W. E. Ayrton</i> and <i>C. S. Whitehead</i>). [See <i>Telegraph</i>] ...	23	327

	VOL.	PAGE
Lines, Long; Parallel Working, with Special Reference to (<i>W. M. Mordey</i>)	23	260
Lloyd, C. O. [<i>Discussion</i>], Problems of Commercial Electrolysis ...	21	566
Local Section, Creation of, in Birmingham	30	347
————— Calcutta	30	347
————— Cape Town, Dublin, Glasgow, and New-castle-on-Tyne	29	118
—————, Creation of, in Manchester	29	346
—————, Rules for	29	944, 946
Lockwood, T. D. [<i>Discussion</i>], Frictionless Motor Meter	29	781, 788
Locomotive Design, Electric (<i>P. V. McMahon</i>). [<i>See Locomotives, Electric</i>]	28	508
Locomotive, Electric, Supersession of the Steam Locomotive (<i>W. Langdon</i>)	30	124
<i>Discussion</i> :—Barnett, P. M., 213; Barr, A., 208; Brown, J., 189; Cardew, Major P., 173; Carus-Wilson, C. A., 177; Crompton, Lieut-Col. R. E., 157; Cunningham, G. C., 153; Deeley, R. M., 200; Dobbie, R. S., 194, 195, 196; Dyson, 201; Falconar, O. L., 195; Field, M. B., 209; Forbes, G., 163; Hammond, R., 160; Heaviside, A. W., 196, 197; Holmes, J. H., 195; Hoy, H. A., 154, 162; Hudleston, F., 166; Humphrey, H. A., 181; Kenny, T. R. D., 182; Lackie, W. W., 208; Langdon, W., 198, 218 (in reply); Lawson, A. J., 171; McIntosh, J. F., 214; Manton, A. W., 185; Mavor, H. A., 157, 200; Mavor, S., 215; Merriman, W. H., 188; Morton, D. H., 202; Parsons, C. A., 154; Pickersgill, W., 215; Ralph, G., 194, 195; Raworth, J. S., 155; Robinson, M., 150; Scott, E. K., 191; Seabrook, A. H., 183; Segundo, E. C. de, 174; Siemens, A., 172; Sprague, F., 175; Swinton, A. A. C., 169; Taylor, A. M., 186; Trotter, A. P., 179; Turnbull, C., 194; Twinnerrow, J. D., 190; Tyler, E. H., 180; Varley, F. H., 184; Walton, A. H., 170; Wood, L., 196; Wood, R., 187; Yorke, R. F., 217.		
Locomotives, Electric, in Practice, and Tractive Resistance in Tunnels, with Notes on Electric Locomotive Design (<i>P. V. McMahon</i>)	28	508
<i>Discussion</i> : Brousson, R. P., 620; Carus-Wilson, C. A., 624; Grove, C. E., 610; McMahon, P. V. (in reply), 626; Mordey, W. M., 619; Smith, R. H., 621; Swan, J. W. (President), 632; Taylor, A. M., 615; Wilson, Ernest, 624.		
Lodge, O.—		
[<i>Papers</i>] Improvements in Magnetic Space Telegraphy ...	27	799
„ Inaugural Address as Chairman of Birmingham Local Section	30	796
[<i>Discussion</i>] Magnetic Space Telegraphy	27	851, 915, 924, 961
———, Award of Fahie Premium to (1899)	28	639
London, Electric Lighting of the City of (<i>General C. E. Webber</i>). [<i>See Lighting</i>]	23	120
Lorrain, J. G. [<i>Discussion</i>], Telephone Switch-Board	24	72
Louis, D. A. [<i>Discussion</i>], Electro-chemical Treatment of Ores ...	27	79, 87
<i>Lugar, Captain</i> [<i>Discussion</i>], Repairs to the South American Company's Cable	26	280

	VOL.	PAGE
Luke, P. V.—		
[Papers], New Danger to which Underground Wires in India are exposed	22	146
[Note], Note on a Case of Lightning on the Telegraph Line in India	23	781
[Discussion] Disturbance of Submarine Cables by Electric Tramways	26	518
„ Electric Intercommunication in Railway Trains ...	27	787
———, Award of Fahie Premium to (1891)	21	3
Lund, A. J. [Discussion], Electrical Time Service	29	141
Lundberg, G. C.—		
[Discussion] Electric Traction and Tramways	23	744
„ Wiring Rules	28	222
Luzern Electric Tramways, Visit to	29	219
Lydall, F. R., Award of Salomons Scholarship to (1893)	22	574

M.

McGraw, J. H. [Discussion], Electric Traction and Tramways ...	23	727
McIntosh, J. F. [Discussion], Supersession of Steam by Electric Locomotive	30	214
Machine Tools. [See Tools.]		
Mackrow, G. C. [Discussion], Electrical Equipment of Ships of War...	29	620
McLaren, John [Discussion], Cost of Electrical Energy	23	494
Maclay, Bailie [Discussion], Electricity Supply	30	115
Maclean, F. G., Inaugural Address as Chairman of Calcutta Local Section	30	979
———, Magnus—		
[Discussion] Compensating Voltmeters for Voltage-drop in Long Feeders	30	591
„ Electricity Supply	30	119
McLean, J. Hardie—		
[Discussion] Cost of Electrical Energy	23	496
„ Electric Wiring	25	39
McMahon, P. V. [Paper], Electric Locomotives in Practice, and Tractive Resistance in Tunnels, with Notes on Electric Locomo- tive Design	28	508, 626
[Discussion] Calculation of Distributing Systems of Electric Traction	29	735
„ Electric Locomotives [Reply]	28	626
„ Electrically Interlocking Railway Signals... ..	26	144
„ Generation of Electrical Energy for Tramways	26	482
„ Load Diagrams of Electric Tramways, &c.	21	309
———, Award of Institution Premium to (1899)	28	638
McWhirter, W.—		
[Discussion] Compensating Voltmeters for Voltage-drop in Long Feeders	30	593
„ Electricity Supply	30	120

	VOL.	PAGE
Madgen, W. L. [<i>Paper</i>], The Electrical Power Bills, 1900 : Before and After	30	475
[<i>Discussion</i>] Electrical Power Bills, 1900 [<i>Reply</i>]	30	534
„ Unsatisfactory Conditions of Wiring	22	579
Magnetic Balance for Workshop Tests of Permeability (<i>J. A. Ewing</i>). [<i>See Balance</i>]	27	526
—— Induction, Telegraphy by (<i>S. Evershed</i>). [<i>See Telegraphy</i>]...	27	852
—— Qualities of Iron, Methods of Testing (<i>Gisbert Kapp</i>)	23	199
—— Space Telegraphy, Improvements in (<i>O. Lodge</i>). [<i>See Telegraphy</i>]	27	799
—— Tester for Measuring Hysteresis in Sheet Iron (<i>J. A. Ewing</i>). [<i>See Tester</i>]	24	398
Magnetisation, Propagation of, in Iron (<i>J. Hopkinson and E. Wilson</i>)	24	194
<i>Discussion</i> :—Addenbrooke, G. L., 210 ; Creak, Capt., 206 ; Evershed, S., 209 ; Fleming, J. A., 205 ; Forbes, George (the Chair- man), 210 ; Hopkinson, J. (in reply), 212 ; Mordey, W. M., 207.		
Magnets, Electro-. [<i>See Electro-Magnets.</i>]		
—— (Field). [<i>See Field-Magnets.</i>]		
Mailloux, C. O. [<i>Discussion</i>], Relative Advantages of Alternating and Continuous-Current Electricity Supply	30	21
Malpas, A. E. [<i>Discussion</i>], Dublin Corporation Electric Light Scheme	30	543
Manby, E. [<i>Discussion</i>], Accumulator Traction	26	676, 687
Mance, Sir Henry [<i>Paper</i>], Inaugural Address as President (1897) ...	26	8
[<i>Discussion</i>] Accumulator Traction	26	715, 765
„ Applications of Electricity in Medical and Surgical Practice	29	371
„ Disturbance of Submarine Cable Working by Electric Tramways	26	530
„ Electric Traction Appliances	26	431
„ Electrically Interlocking Railway Signals... ..	26	79, 159
„ Generation of Electrical Energy for Tramways	26	500
„ Magnetic Space Telegraphy... ..	27	905
„ Relative Size, Weight, and Price of Dynamo- Electric Machines... ..	26	178
„ Repairs to the South American Company's Cable	26	301
„ Rotatory Converters	27	719
„ Telephone Exchanges	25	378
„ Telephone Trunk Line System in Great Britain ...	25	657, 680
——, ——, in Seconding Vote of Condolence with Relatives of Electrical Engineers, R.E., who fell whilst on Active Service	30	307
Manchester Local Section, Creation of	29	346
——, ——, Application of Steam-Power to the Generation of Electrical Energy (<i>J. S. Raworth</i>). [<i>See Steam</i>]	30	971
——, ——, Relative Advantages of Direct-Current and Three-phase Distribution for Small Installa- tions (<i>H. A. Earle</i>). [<i>See Distribution</i>]	30	308
——, ——, Training of Electrical Engineers (<i>J. T. Nicolson</i>). [<i>See Training</i>]	30	773
——, ——, Use of Storage Batteries in Connection with Electric Tramways (<i>G. A. Grindle</i>). [<i>See</i> <i>Batteries</i>]	30	1098

	VOL.	PAGE
Manchester Local Section, Resolution of Condolence with the King on the Death of Her Majesty Queen Victoria	30	394
———, Visit of Students' Section to	30	1217
Manton, A. W. [<i>Discussion</i>], Supersession of Steam by Electric Locomotive	30	185
Manufacture of Lamps and other Apparatus for 200-Volt Circuits (<i>G. Binswanger-Byng</i>)... ..	27	118
Manville, E.—		
[<i>Discussion</i>] Accumulator Traction	26	682, 685, 686
,, Electric Light for Railway Purposes	24	327
,, Load Diagrams of Electric Tramways	21	319
Marchant, E. W.—		
[<i>Discussion</i>] Oscillographs [<i>Reply</i>]	28	470
,, Rapid Variations in Current through Direct-Current Arc	30	275
———, ———, Award of Paris Electrical Exhibition Premium to (1899)	28	639
———, ———, Award of Salomons Scholarship to (1896)	25	684
———, ———, and W. Duddell, [<i>Paper</i>], Experiments on Alternate-Current Arcs by Aid of Oscillographs	28	1
Marconi, G. [<i>Paper</i>], Wireless Telegraphy	28	273
———, ———, in Reply to Discussion on his Paper	28	311
———, ———, Award of Fahie Premium to (1899)	28	639
Marindin, Major F. A. [<i>Discussion</i>], Electrically Interlocking Railway Signals	26	116
Mascart, E., In Welcoming the Institution to Paris	30	1
———, ———, Letter concerning Paris International Electrical Congress	29	798
———, ———, Elected Honorary Member (1901)	30	1211
Maschinenfabrik Oerlikon, Visit to	29	199
Mather, T. [<i>Discussion</i>], Capacity in Alternate-Current Working	30	410
———, and Professor W. E. Ayrton [<i>Papers</i>], A Universal Shunt Box for Galvanometers	23	314
———, ———, Transparent Conducting Screens for Electric and other Apparatus	23	376
———, ———, An Astatic Station Voltmeter	23	380
Matthiessen's Standard, Report of Copper Conductors Committee on	29	16
Maurice, W. [<i>Discussion</i>], Use of Electricity in Coal Mines	30	875
Mavor, A. E.—		
[[<i>Discussion</i>] Electrical Transmission of Power from Niagara... ..	22	598
,, Problems of Commercial Electrolysis	21	558
,, The Specification of Insulated Conductors, &c.	21	228
Mavor, H. A.—		
[<i>Paper</i>] Some Considerations concerning Electric Driving (Glasgow Local Section)	29	889, 898
[<i>Discussion</i>] Dynamos	26	601
,, Electric Driving [<i>Reply</i>]	29	898
,, Method of Charging for Public Electricity Supply	29	689
,, Prevention and Control of Sparking, &c.	22	441
,, Reversible Regenerative Armatures and Short Air-Space Dynamos	24	148
,, Supersession of Steam by Electric Locomotive	30	157, 200
Mavor, Sam. [<i>Paper</i>], Concentric Wiring	24, 602	25 30, 187

	VOL.	PAGE
Mavor, Sam. (continued)—		
[Discussion] Accumulator Traction	26	685
“ Concentric Wiring [Reply]	25	30, 187
“ Electricity Supply	30	118
“ Relative Size, Weight, and Price of Dynamo-electric Machines	26	171
“ Supersession of Steam by Electric Locomotive	30	215
“ Wiring Rules	28	207, 237
Measurement, Alternate-Current, Test-Room Methods of (<i>A. C. Campbell</i>)	30	889
(Discussed with Mr. Crawley's Paper, Note on the Use of the Differential Galvanometer.)		
<i>Discussion</i> :—Addenbrooke, G. L., 918; Callendar, H. L., 924; Campbell, A. (in reply), 925, 1128; Crawley, C. W. S. (in reply), 925, 1129; Drysdale, C. V., 915; Fisher, W. C., 922; Gillespie, M. M., 923; Glazebrook, R. T., 913; Russell, A., 919; Trotter, A. P., 914.		
Medical and Surgical Practice, Applications of Electricity in (<i>H. Lewis Jones</i>)	29	346
<i>Discussion</i> :—Brett, Capt. W. P., 373; Coffin, W. H., 372; Jones, Dr. H. Lewis (in reply), 378; Mance, Sir H., 371; Mordey, W. M., 373; Mudford, F. J., 370; Perry, J., 371; Thompson, S. P. (President), 366; Trotter, A. P., 374; Walker, S. F., 374; Webber, General C. E., 368; Wimshurst, J., 367.		
Mensing, L. C. H. [<i>Discussion</i>], Polyphase Equipment of Factories ...	30	1014
Mercadier's Multiple Telegraph at Paris Exhibition (<i>J. Gavey</i>) ...	30	78
Merriman, W. H. [<i>Discussion</i>], Supersession of Steam by Electric Locomotive	30	188
Metal Electrode Switch Contacts (<i>W. Duddell</i>)	30	252
Metals, Durability under Atmospheric Exposure	30	348
Meter, Motor, Frictionless (<i>S. Evershed</i>)	29	743
<i>Discussion</i> :—Aron, L., 789; Ayrtton, W. E., 787; Boot, H. L. P., 786; Everett, W. H., 789; Evershed, S. (in reply), 790; Ferranti, S. Z. de, 782; Lockwood, T. D., 781, 788; Mordey, W. M., 785; Schattner, E. B., 786; Thompson, S. P. (President), 790; Wood, R., 784.		
Meter, Watt-Hour (<i>F. Holden</i>)	30	944
<i>Discussion</i> :—Ayrtton, W. E., 963; Campbell, A. 964; Crawley, C. W. S., 964; Drysdale, C. V., 965; Evershed, S., 960; Hammond, R., 962; Hirst, H., 963; Holden, F. (in reply), 967; Perry, J. (President), 966; Trotter, A. P., 963.		
Meter, Electricity, Zero-Torque (<i>Joseph Edmondson</i>)	24	542
Meters, Electricity, for Registration of Small Currents (<i>A. H. Gibbings</i>)	27	547
—, —, Supply (<i>G. W. D. Ricks</i>)	25	57
—, —, Electrolytic (<i>A. H. Gibbings</i>)	27	547
Miller, H. W.—		
[Discussion] Apparatus for 200-Volt Circuits	27	172
“ Cost of Steam Raising and of Electrical Energy	29	82
Miller, Leslie [<i>Discussion</i>], Testing and Working Alternators ...	22	134, 188
—, L. B. [<i>Discussion</i>], Wireless Telegraphy	28	305
—, T. L. [<i>Discussion</i>], Direct-Current <i>versus</i> Three-phase Distribution	30	322

	VOL.	PAGE
Mills, H. L. [<i>Discussion</i>], Rotatory Converters	27	731
Milne, J. [<i>Discussion</i>], Repairs to the South American Company's Cable	26	288
Mines, Coal, Some Notes on the Electrical Transmission of Power in (<i>H. W. Ravenshaw</i>)	30	806
Miners' Safety Lamps, Electrical (<i>S. F. Walker</i>)	30	815
<i>Discussion on above two Papers</i> :—Atkinson, W. N., 861; Barnes, J. S., 872; Brown, E., 867; Foster, C. Le Neve 859; Grave, L. de, 869; Hall, H., 872; Holiday, R., 863; Kapp, G., 856; Maurice, W., 875; Mitcheson, G. A., 862; O'Gorman, M., 881; Peake, H. C., 872; Ravenshaw, H. W. (in reply), 886; Sayers, W. B., 878; Snell, A. T., 879; Trotter, A. P., 859; Walker, S. F. (in reply), 884; Wilkinson, H. D., 876.		
Mitcheson, G. A. [<i>Discussion</i>], Do., do.	30	862
Minshall, T. H. [<i>Discussion</i>], Capacity in Alternate-Current Working	30	425
Moir, A.— [<i>Discussion</i>], Electrically-driven Machine Tools	30	560
„ Wiring Rules	30	1150
Morcom, A. [<i>Discussion</i>], Single-Acting High-Speed Engine	24	494
Morley, W. M.— [<i>Papers</i>] Capacity in Alternate-Current Working... ..	30	364
„ A Detail in Parallel Working of Alternators	22	442
„ Dynamos	26	532, 624
„ Parallel Working, with Special Reference to Long Lines	23	260, 304
„ On Testing and Working Alternators. [<i>See Alternators</i>]	22	116, 188
[<i>Discussion</i>] Alternate-Current Transformers	21	727, 740
„ Apparatus for 200-Volt Circuits	27	139
„ Applications of Electricity in Medical and Surgical Practice	29	373
„ Capacity in Alternate-Current Working [<i>Reply</i>], 30 388, 391, 396, 463		
„ Design of Electric Railway Motors	27	613, 630
„ Distribution of Power by Alternate-Current Motors	22	329
„ Dynamos [<i>Reply</i>]	26	624
„ Electric Light for Railway Purposes	24	349
„ ——— Locomotives	28	619
„ Electrical Distribution by the Newcastle-on-Tyne Company	21	496
„ Electrical Transmission of Power from Niagara	22	541
„ Electrolytic Centrifugal Process for Production of Copper Tubes	29	280
„ ——— Process for the Manufacture of Parabolic Reflectors	27	111
„ Experiments on Alternate-Current Arcs by Aid of Oscillographs	28	457
„ Frictionless Motor Meter	29	785
„ Hissing of the Electric Arc	28	434
„ Induction Motor	28	356
„ Light of the Electric Arc	21	388
„ Magnetic Balance for Tests of Permeability	27	536
„ Parallel Working [<i>Reply</i>]	23	304
„ Prevention and Control of Sparking, &c.	22	403, 418

	VOL.	PAGE
Mordey, W. M. (<i>continued</i>)—		
[<i>Discussion</i>] Problems of Commercial Electrolysis	21	578
„ Propagation of Magnetisation in Iron	24	207
„ Relative Advantages of Alternating- and Con- tinuous-Current Electricity Supply	30	19
„ Report of Swiss Visit	29	255
„ Reversible Regenerative Armatures and Short Air- Space Dynamos	24	146, 183
„ Rotatory Converters	27	710
„ Testing and Working of Alternators [<i>Reply</i>]	22	188
„ ——— the Magnetic Qualities of Iron	23	223
„ Transparent Conducting Screens	23	386
„ Wiring Rules	28	211
———, ———, Award of Institution Premium to (1897)	26	719
Morris, J. T., Award of Salomons Scholarship to (1893)	22	574
Morse, Sydney—		
[<i>Discussion</i>] Electrical Power Bills of 1900	30	516
„ Generation of Electrical Energy for Tramways	26	488
Morshead, L. R., Award of Students' Premium to (1899)	28	639
Morton, Captain D. [<i>Discussion</i>], Repairs to the South American Com- pany's Cable	26	298
———, D. H. [<i>Discussion</i>], Supersession of Steam by Electric Loco- motive	30	202
Motor, The Induction (<i>E. Wilson</i>)	28	321
Motors, Alternate-Current, Distribution of Power by (<i>Albion T. Snell</i>). [<i>See Power</i>]	22	280
——— (Brown, Boveri & Co.'s), Exhibition and Description of Two of (<i>C. P. Sparks</i>)	22	320
Motors, Electric Railway, Design of, for Rapid Acceleration (<i>C. A. Carus-Wilson</i>)	27	581
<i>Discussion</i> :—Ayrton, W. E., 621, 630; Carus-Wilson, C. A. (in reply), 630; Grove, C. E., 626; Mordey, W. M., 613, 630; Perry, J., 629; Scott, E. K., 625; Smith, R. H., 614; Swan, J. W. (President), 628; Taylor, A. M., 608.		
——— for 200-Volt Circuits (<i>G. Binswanger-Byng</i>)	27	135
Motors, Induction, Alternating-Current (<i>A. C. Eborall</i>)	29	799
<i>Discussion</i> :—Addenbrooke, G. L., 847; Carus-Wilson, C. A., 843; Eborall, A. C. (in reply), 849; Esson, W. B., 845; Ferranti, S. Z. de, 844; Field, M. B., 836; Langdon-Davies, W., 839; Rhodes, W. G., 840; Thomas, E., 848; Wilson, E., 842.		
Mowat, M. [<i>Discussion</i>], Utilisation of Water Power	25	549
Mudford, F. J. [<i>Discussion</i>], Applications of Electricity in Medical and Surgical Practice	29	370
Multiphase. [<i>See Polyphase.</i>]		
Multiple Telegraph, Mercadier's, at Paris Exhibition (<i>J. Gavey</i>)	30	78
———, Rowlands, at Paris Exhibition (<i>J. Gavey</i>)	30	74
Munro, J. M. [<i>Discussion</i>], Electricity Supply	30	117
Murphy, W. J.—		
[<i>Discussion</i>] Capacity Measurements of Long Submarine Cables	28	489, 495, 503
„ Electric Tramways	27	467
Murray, E. [<i>Discussion</i>], Wireless Telegraphy	28	293
Musical Arc (<i>W. Duddell</i>)	30	248

N.

	VOL.	PAGE
Navy, Electrical Equipment of Ships of (<i>C. E. Grove</i>)	29	530
Newcastle Local Section, Area of	30	348
— — — — —, Creation of (1899)	29	118
— — — — —, Inaugural Address of the Chairman (<i>Mr. A. W. Heaviside</i>) for 1900	29	900
— — — — —, Discussion on Supersession of Steam by Electric Locomotive	30	194
— — — — —, Electrically-driven Machine Tools, and their Advantages for Use in Engineering Workshops (<i>G. Ralph</i>)	30	545
— — — — —, Notes on Wiring Rules (<i>F. Broadbent</i>)	30	1130
— — — — —, Resolution of Condolence with the King on the Death of Her Majesty Queen Victoria	30	394
Newitt, W. T., Obituary Notice of... ..	28	679
Niagara Falls, The Electrical Transmission of Power from (<i>George Forbes</i>). [See <i>Power</i>]	22	484
Nicolson, J. T., Training of Electrical Engineers	30	773
— — — — —, Reply to the Discussion on his Paper	30	792
Nisbett, G. H. [<i>Discussion</i>], Capacity on Alternate-Current Working	30	443
Nixon, C. B. [<i>Paper</i>], Application of Electric Power to Machine Tools	30	1200
— — — — —, Award of Students' Premium to (1900) 29, 863 ; (1901)	30	1215
Noakes, L. F. [<i>Discussion</i>], Electrical Equipment of Ships of War	29	615
Northern Society of Electrical Engineers, Incorporation in Institution	29	345, 796

O.

Obach, E. F. A., Obituary Notice of	28	679
Obituary Notices of—		
Anderson, Sir William, K.C.B., F.R.S.	28	665
Bevan, Mark	29	948
Bold, Edward Henry	30	1244
Buckney, T.	29	948
Cecil, Lord Sackville Arthur	28	665
Clark, Josiah Latimer, F.R.S.	28	667
Cooper, M.	29	948
Davies, William Henry	28	672
Dent, M. C.	29	949
Douglass, Sir James N., F.R.S.	28	672
Doyle, J. D.	29	949
Dresing, P Christian	28	672
Drummond, Richard Oliver Gardner	28	673
Eidsforth, Richard Pentney	28	673
Epstein, L.	29	950
Fitzgerald, Professor G. F., F.R.S.	30	1244
Galton, Captain Sir Douglas, K.C.B., F.R.S.	28	674
Gott, David W.	28	675
Grove, C. E.	30	1246
Hampson, Robert Stewart	28	756
Hopkinson, Dr. John	28	676

	VOL.	PAGE
Obituary Notices of (continued)—		
Hughes, Professor D. E., F.R.S.	29	951
Jackson, Colonel Robert Raynsford	28	678
King, Frank	29	955
Kruesi, John	28	678
Lemon, Dr. C.	30	1247
Newitt, William Thomas	28	679
Obach, Dr. Eugen F. A.	28	679
Parsoné, E. W.	30	1247
Shallenberger, Oliver Blackburn	28	681
Smith, B.	29	956
Summers, Charles H.	28	682
Tavaria, H. K.	30	1248
Walker, Colonel P. B.	30	1249
Wells, Lieut.-Colonel Henry Lake, C.I.E.	28	682
Winter, George Kift	28	683
Wyles, F.	29	957
Oerlikon, Maschinenfabrik, Visit to	29	199
O Gorman, M.—		
[Paper] Insulation on Cables	30	608, 696
[Discussion] Capacity in Alternate-Current Working	30	417
" Experiments on Alternate-Current Arcs by Aid of Oscillographs	28	468
" Insulations on Cables [Reply]	30	696
" Rapid Variations in Current in Direct-Current Arc	30	274
" Registration of Small Currents	27	576
" Telephone Trunk Line System in Great Britain	25	660
" Use of Electricity in Coal Mines	30	881
" Wireless Telegraphy	28	308
" Wiring Rules	28	223, 237
———, ———, Award of Institution Premium to (1901)	30	1214
Oil as an Insulator (D. E. Hughes)	21	244
Remarks by Mr. Wimshurst in Explanation of the Illustrative Experimental Apparatus	21	256
Discussion :—Ayrton, W. E. (the President), 280; Carter, E. T., 283; Donovan, H. C., 278; Fleming, J. A., 277; Forbes, George, 282; Gray, William, 273; Hall, H. Cuthbert, 279, 281; Hughes, D. E. (in reply), 289; Johnson, W. C., 269, 288; Kapp, Gisbert, 281; Preece, Sir W. H., 284; Rogers, F. M., 272; Swinburne, James, 288; Swinton, A. A. C., 267; Trotter, A. P., 282; Varley, F. H., 275.		
Ores, Electro-chemical Treatment of (<i>General C. E. Webber</i>). [See <i>Electro-Chemical</i>]	27	38
Oscillographs, Experiments on Alternate-Current Arcs by Aid of (W. Duddell and E. W. Marchant)	28	1
Discussion :—Ackerman, E., 468; Andrews, L., 450, 455; Ayrton, W. E., 451, 464; Ayrton, Mrs., 468; Duddell, W. (in reply), 470; Fleming, J. A., 457; Gaster, L., 467; Mar- chant, E. W. (in reply), 470; Mordey, W. M., 457; O'Gorman, M., 468; Petavel, J. E., 467; Swan, J. W. (President), 468, 474; Swinton, A. A. C., 467; Tandy, F., 468; Thompson, S. P., 459; Wilson, E., 469.		
Ovens, J. L. [Discussion], New Form of Portable Photometer	22	208

P.

	VOL.	PAGE
Parallel Running of Alternators, Effect of Governors on (<i>L. Wilson</i>)	28	389
——— Working of Alternators, Note on a Detail in (<i>W. M. Mordey</i>)	22	442
Parallel Working with Special Reference to Long Lines (<i>W. M. Mordey</i>)	23	260
<i>Discussion</i> :—Ayrton, W. E., 298; Forbes, George, 301; Kapp, Gisbert, 284; Mordey, W. M., 304; Raworth, J. S., 280; Sankey, Capt. H. R., 294; Siemens, Alexander (the President), 314; Sparks, C. P., 283; Thompson, S. P., 288; Webber, General C. E., 293; Weekes, R. W., 284.		
Paris Exhibition (1900), Appointment of Student-Reporters at ...	30	1216
———, Notices of Exhibits in Classes of :—		
Applications (Various) of Electricity (<i>Major-General C. E. Webber</i>)	30	23
Electric Light (<i>Carl Hering</i>)	30	34
Electro-Chemistry (<i>Carl Hering</i>)	30	34
Mechanical Production and Utilisation of Electricity (<i>E. Hospitalier</i>)	30	26
Telegraphs and Telephones (<i>J. Gavey</i>)	30	73
Paris, Meeting in (with American Institute of Electrical Engineers) ...	30	1
Parker, T. [<i>Discussion</i>], Accumulator Traction	26	699
Parshall, H. F. —		
[<i>Paper</i>], Earth Returns for Electric Tramways	27	440
[<i>Discussion</i>] ———— [Reply]	27	482
„ Electric Traction and Tramways	23	699
„ Appliances	26	410
„ Reversible Regenerative Armatures and Short Air-Space Dynamos	24	152
„ Rotatory Converters	27	721
———, ———, Award of Institution Premium to (1898)	28	638
Parsoné, E. W. [<i>Discussion</i>], Repairs to the South American Company's Cable	26	289
———, ———, Obituary Notice of	30	1247
Parsons, Hon. C. A. [<i>Discussion</i>], Supersession of Steam by Electric Locomotive	30	54
Pasquier, A. E. du [<i>Discussion</i>], Storage Battery Problems	29	1
Patchell, W. H. —		
[<i>Discussion</i>] Cost of Electrical Energy	27	408
„ High-Voltage Lamps	25	282
„ Polyphase Sub-station Machinery	30	762
„ Storage Batteries controlled by Reversible Boosters	30	1077
Peache, J. C. [<i>Discussion</i>], Cost of Electrical Energy	23	520
Peake, H. C. [<i>Discussion</i>], Use of Electricity in Coal Mines	30	872
Pearson, A. [<i>Discussion</i>], Polyphase Equipment of Factories	30	1016
Pelatan, L. [<i>Discussion</i>], Electro-chemical Treatment of Ores	27	76, 82
Pension to the Retiring Secretary (<i>Mr. F. H. Webb</i>)	26	731
Periodic Curves, A Simple Method of Analysing (<i>E. Basil Wedmore</i>) ...	25	224
Periodicity in British Central Stations	29	300, 328
———, Standard; Report on, by Committee on Uniformity	28	272
Permeability, Magnetic Balance for Workshop Tests of (<i>J. A. Ewing</i>). [<i>See Balance</i>]	27	525

Permeability of Iron and Steel; An Instrument for Measuring (<i>C. G. Lamb and M. Walker</i>)... ..	30
<i>Discussion</i> :—Drysdale, C. V., 942; Esson, W. B., 942; Evershed, S., 941; Hammond, R., 942; Lamb, C. G. (in reply), 944.	
Perry, John [<i>Paper</i>], Inaugural Address as President	30
———, ———, Address (as President) to South African Contingent of Electrical Engineers, R.E., Volunteers	30
[<i>Discussion</i>] Alternate-Current Transformers	22
„ Alternate Currents	21
„ Applications of Electricity in Medical and Surgical Practice	29
„ Cost of Steam Raising and of Electrical Energy... ..	29
„ Design of Electric Railway Motors	27
„ Distant Electric Power Transmission	29
„ Electric Trainways	27
„ Generation of Electrical Energy for Tramways	26
„ Magnetic Balance for Tests of Permeability	27 533,
„ Problems of Commercial Electrolysis	21
„ Registration of Small Currents	27
„ Report of Swiss Visit	29
„ Testing the Magnetic Qualities of Iron	23
„ Utilisation of Schaffhausen Water-Power	29
„ Watt-Hour Meter	30
„ Wireless Telegraphy	28 291,
———, ———, in Opening Meeting in Paris	30
———, ———, in Reference to the Death of Prof. G. F. Fitzgerald	30
Petavel, J. E. [<i>Discussion</i>], Experiments on Alternate-Current Arcs by Aid of Oscillographs	28
———, ———, Award of Salomons Scholarship to (1895)	24
Phillips, C. J.—	
[<i>Discussion</i>] Telephone Switch-Board	24
„ ——— Trunk Line System in Great Britain	25
Photometer, Portable, New Form of (<i>Sir David Salomons</i>)	22
<i>Discussion</i> :—Ayrton, W. E., 209; Crookes, Sir W., 208; Fairfax, J. S., 211; Ovens, J. L., 208; Salomons, Sir David, (in reply), 213; Trotter, A. P., 208.	
Picard [<i>Discussion</i>], Electrolysis of Gold... ..	24
Pickersgill, W. [<i>Discussion</i>], Supersession of Steam by Electric Locomotive	30
Pickstone, M. T. [<i>Discussion</i>], Electricity Supply	30
Pigg, J. [<i>Paper</i>], Rules for the Regulation of the Wiring of Premises for Connection to Public Supply Mains	28
———, ———, Reply to Discussion on this Paper	28
Pilcher, O. A. [<i>Discussion</i>], Electrolytic Process for the Manufacture of Parabolic Reflectors	27
Plant, Electrical Engineering, Standardisation of (<i>R. P. Sellon</i>). [<i>See Standardisation</i>]	29
Polarisation, Means of Eliminating, at the Fault in Cable Testing. (<i>G. K. and G. B. Winter</i>)	22
Pollak and Virág's Photo-autographic Telegraph at Paris Exhibition	30
Polyphase Cables, Capacities of (<i>A Russell</i>)	30 1

	VOL.	PAGE.
Polyphase Equipment of Factories (<i>W. Wyld</i>). [Birmingham Local Section]	30	986
<i>Discussion:</i> —Bate, A. H., 1016; Blackburn, A. B., 1016; Housman, R. H., 1015; Lea, Henry, 1017; Mensing, L. C. H., 1014; Pearson, A., 1016; Rosevere, G. R., 1014; Sowter, W. J. Unwin-, 1012; Sumpner, W. E., 1012; Taylor, A. M., 1015; Vaudrey, J. C., 1016; Wilkinson, H. D., 1013; Wyld, W. (in reply), 1017.		
Polyphase Sub-station Machinery (<i>A. C. Eborall</i>): [See <i>Sub-station</i>]	30	702
Pope, Franklin Leonard, Announcement of the Death of	24	582
Porte, A. E. [<i>Discussion</i>], Dublin Corporation Electric Light Scheme	30	542
Potential Difference Wave, Applied, Experimental Tests on the Influence of the Shape of the, on the Iron Losses of the Transformers (<i>Beeton, Taylor, and Barr</i>). [See <i>Transformers</i>]	25	474
—— (High) and High Frequency, Experiments with Alternate Currents of (<i>Nikola Tesla</i>)	21	51
Poulsen's Telegraphone (<i>J. Gavey</i>)	30	88
Power, Alternate-Current, Measurement of (<i>J. A. Fleming</i>)	21	602
Power Bills, Electrical, 1900; Before and After (<i>W. L. Madgen</i>)	30	475
<i>Discussion:</i> —Addenbrooke, G. L., 517; Ayrtun, W. E., 521; Baillie, G. H., 532; Baker, C. A., 530; Chatwood, A. B., 531; Clay, C. B., 523; Crompton, Lieut.-Col., R.E., 527; Garcke, E., 519; Gavey, J., 526; Hammond, R., 514; Hirst, H., 529; Howard, Ebenezer, 533; Jones, Ll. Atherley, 503; Knox, Vesey, 497; Madgen, W. L. (in reply), 534; Morse, S., 516; Raworth, J. S., 499; Sellon, R. P., 498; Swinton, A. A. C., 501; Thompson, S. P., 504; Webber, Gen. C. E., 525.		
Power-Distribution by Alternate-Current Motors (<i>Albion T. Snell</i>)	22	280
<i>Discussion:</i> —Ayrtun, W. E., 335; Kapp, Gisbert, 315; Kolle, H. W., 335; Mordey, W. M., 329; Siemens, Alexander (the Chairman), 346; Snell, Albion T. (in reply), 317, 344; Sparks, C. P., 320; Swinburne, J., 324, 336.		
Power, Electric, Application of to Machine Tools (<i>G. Ralph</i>)	30	545
——, ——, ——, ——, —— (<i>C. B. Nixon</i>)	30	1200
Power, Electrical Transmission of, from Niagara Falls (<i>George Forbes</i>)	22	484
<i>Discussion:</i> —Brown, C. E. L., 600; Crompton, R. E., 593; Evershed, S., 591; Ferranti, S. Z. de, 583; Fleming, J. A., 534; Forbes, George (in reply), 603; Kapp, Gisbert, 555; Mavor, A. E., 598; Mordey, W. M., 541; Preece, Sir W. H. (the President), 617; Siemens, Alexander, 590; Swinburne, James, 565; Thompson, S. P., 560; Walker, S. F., 568; Webber, Gen. C. E., 599; Weekes, R. W., 597.		
—— Factor of Alternate-Current Motors (<i>W. M. Mordey</i>)	22	127
—— Stations, Storage Batteries controlled by Reversible Boosters in (<i>J. S. Highfield</i>). [See <i>Batteries</i>]	30	1040
Power-Transmission, Distant Electric (<i>George Forbes, F.R.S.</i>)	29	629
<i>Discussion:</i> —Addenbrooke, G. L., 663; Esson, W. B., 664; Ferranti, S. Z. de, 660; Field, M. B., 669; Forbes, G. (in reply), 674; French, A. H., 672; Hammond, R., 665; Kempster, J. W., 673; Perry, J., 658; Swinburne, J., 666; Thompson, S. P. (President), 676; Wilson, E., 668.		

	VOL.	PAGE
Power Transmission, Electrical, in Coal Mines (<i>H. W. Ravenshaw</i>).		
[See <i>Mines</i>]	30	806
Poynting's Theorem... ..	30	678
Prásil Professor F. [<i>Discussion</i>], Utilisation of Schaffhausen Water-		
Power	29	185
Preece, A. H. [<i>Discussion</i>], Electric Light for Railway Purposes ...	24	347
Preece, Sir W. H.—		
[<i>Papers</i>] Inaugural Address as President	22	36
„ Etheric Telegraphy	27	869
„ Daily Insulation Testing of Telegraph Lines	24	546
„ Notes of a Trip to the United States, 1893	23	40
„ Supplementary Remarks in Reference to his Paper on		
the Specification of Insulated Conductors, &c.	21	185
„ Communication in Reference to the First Practical		
Telegraph ever Laid,	26	633
[<i>Discussion</i>] Alternate-Current Transformers	22	114
„ Disturbance of Submarine Cables by Electric		
Tramways	26	517
„ Earth Currents in India	22	223
„ Electric Intercommunication in Railway Trains... ..	27	776
„ ——— Traction Appliances	26	401, 416
„ Electrical Distribution by the Newcastle-on-Tyne		
Company	21	493
„ ——— Transmission of Power from Niagara	22	617
„ Magnetic Space Telegraphy... ..	27	849, 897
„ Oil as an Insulator	21	284
„ Prevention and Control of Sparking, &c.	22	432
„ Relative Advantages of Alternating and Con-		
tinuous Current Electricity Supply	30	6
„ Repairs to the South American Company's Cable		
Specification of Insulated Conductors [<i>Reply</i>]	26	267
„ Telegraphs and Telephones at the Paris Exhibition		
Telephone Exchanges	30	230
„ Telephone Exchanges	30	93
„ Telephone Trunk Line System in Great Britain	25	360
„ Telephone Trunk Line System in Great Britain	25	672
Preller, C. S. Du Riche [<i>Paper</i>], Electric Steep-Grade Traction in		
Europe	23	684
[<i>Discussion</i>] Electric Light for Railway Purposes	24	314
„ ——— Steep-Grade Traction in Europe [<i>Reply</i>]	23	770
„ Electrolysis of Gold	24	269
„ Reversible Regenerative Armatures and Short Air-		
Space Dynamos	24	170, 177
„ Single-Acting High-Speed Engine	24	520
Premium, Willans, Award of, to Mr. Mark Robinson (1897)	26	720
Premiums, Award of, for 1891 [to Messrs. G. C. Lamb, E. W. Smith,		
W. Woods, J. Swinburne, and P. V. Luke]	21	3
———, ———, for 1892 [to Messrs. N. Tesla, A. Reckenzaun,		
A. W. Heaviside, and R. C. Jackson]	21	718
———, ———, for 1893 [to Messrs. W. B. Sayers and (<i>for</i>		
<i>Students</i>) W. R. Cooper]	22	573, 574
———, ———, for 1894 [to Messrs. H. D. Wilkinson and (<i>for</i>		
<i>Students</i>) G. C. Allingham]	23	715
———, ———, for 1895 [to Messrs. M. Robinson, J. A. Ewing,		
E. Kingsbury, and (<i>for Students</i>) A. C. Eborall]	24	628

	VOL.	PAGE
Premiums, Award of, for 1896 [to Messrs. S. Beeton, C. P. Taylor, J. M. Barr, and (<i>for Students</i>) E. Ray, V. Watlington, and E. B. Wedmore]	25	684
———, ———, for 1897 [to Messrs. W. M. Mordey, J. Gavey, H. Benest, A. P. Trotter, and (<i>for Students</i>) P. S. Sheardown, F. Johnston, R. M. Sayers, and S. S. Grant]	26	719
———, ———, for 1898 [to Messrs. H. F. Parshall, R. Hammond, L. Andrews, H. N. Allen, and (<i>for Students</i>) J. M. Donaldson, M. Solomon, and E. E. Tasker]	28	638
———, ———, for 1899 [to Messrs. P. V. McMahon, W. Duddell, E. W. Marchant, O. Lodge, G. Marconi, (Mrs.) Ayrton, J. E. Young, and (<i>for Students</i>) W. G. Royal-Dawson, M. Gardner, R. P. Howgrave-Graham, L. Wilson, L. R. Morshead, and H. M. Dowsett]	28	639
———, ———, for 1900 [to Messrs. C. E. Grove, S. Evershed, G. Forbes, H. M. Sayers, A. Russell, C. C. Hawkins, R. Wightman, and (<i>for Students</i>) R. P. Howgrave-Graham, C. B. Nixon, and H. J. Humphreys]	29	863
———, ———, for 1901 [to Messrs. M. O'Gorman, W. Duddell, A. C. Eborall, J. S. Highfield, M. B. Field, W. Wyld, G. Ralph, F. Holden, and (<i>for Students</i>) C. B. Nixon, F. J. Hiss, Jun., J. H. Vigor, and J. H. West]	30	1214
Price, Size, and Weight of Dynamo-electric Machines, Relative (<i>Ernest Wilson</i>). [See <i>Dynamo</i>]	26	160
Problem of Arc-Lighting from 250-Volt Supply (<i>W. B. Sayers</i>). [Glasgow Local Section]	29	382
Puttkammer, C. [<i>Discussion</i>], Electrical Time-Service... ..	29	286

Q.

Queen Victoria, Address of Congratulation to, on her Diamond Jubilee	26	572
———, Resolutions of Condolence on Occasion of Her Majesty's Death	30	393, 394
Quin, R. C. [<i>Discussion</i>], Calculation of Distributing Systems of Electric Traction	29	735

R.

Rails, Tramway, Electric Welding of (<i>R. J. Wallis-Jones</i>)	27	642
Railway, City and South London (<i>P. V. McMahon</i>)	28	508
——— Motors, Electric, for Rapid Acceleration, Design of (<i>C. A. Carus-Wilson</i>). [See <i>Motors</i>]	27	561

	VOL.	PAGE
Railway, Employment of Electric Light on (<i>W. Langdon</i>). [See <i>Light</i>]	24	278
——, Supersession of Steam by Electric Locomotive (<i>W. Langdon</i>). [See <i>Locomotive</i>]	30	124
—— Telegraphs, with Special Reference to Recent Improvements (<i>W. Langdon</i>). [See <i>Telegraphs</i>]	25	380
Railway Trains, Electric Intercommunication in (<i>W. E. Langdon</i>)	27	741
<i>Discussion</i> :—Hollins, F., 784; Langdon, W. E. (in reply), 788; Leonard, W., 778; Luke, P. V., 787; Preece, Sir W. H., 776; Swan, J. W. (President), 776, 795; Thompson, S. P., 783; Winter, W. H., 781; Wolff, C. E., 782.		
Railways, Electrically Interlocking the Block and Mechanical Signals on (<i>F. T. Hollins</i>). [See <i>Signals</i>]	26	37
Ralph, G.—		
[<i>Paper</i>] Electrically-driven Machine Tools, and their Use in Engineering Workshops. [Newcastle Local Section]	30	545
[<i>Discussion</i>] Electrically-driven Machine Tools [<i>Reply</i>]	30	565
„ Supersession of Steam by Electric Locomotive	30	194, 195
——, ———, Award of Premium to (1901)	30	1215
Rangefinders for Use in Ships of War (<i>C. E. Grove</i>)	29	562
Raphael, F. C.—		
[<i>Discussion</i>] Insulation on Cables	30	693
„ Prevention of Interruptions to Electricity Supply	27	511
„ Wiring Rules	28	187
Rathausen Central Station, Visit to	29	210
Ravenshaw, H. W.—		
[<i>Paper</i>], Some Notes on the Electrical Transmission of Power in Coal Mines. [See <i>Mines</i>]	30	806
[<i>Discussion</i>] Electrical Transmission of Power in Coal Mines [<i>Reply</i>]	30	886
„ Relative Size, Weight, and Price of Dynamo-Electric Machines	26	169
„ Reversible Regenerative Armatures and Short Air-Space Dynamos	24	150
„ Testing the Magnetic Qualities of Iron	23	227
Rawlings, W. R.—		
[<i>Discussion</i>] Apparatus for 200-Volt Circuits	27	166
„ Electric Wiring	25	144
„ High-Voltage Lamps... ..	25	284
Raworth, J. S.—		
[<i>Papers</i>] Application of Steam Power to the Generation of Electrical Energy. [Manchester Local Section]	30	971
„ Generation of Electrical Energy for Tramways	26	432, 493
[<i>Discussion</i>] Accumulator Traction	26	708
„ Alternate-Current Transformers	21	746
„ Apparatus for 200-Volt Circuits	27	143
„ Cost of Electrical Energy	23, 435	27 400
„ Dynamos	26	593
„ Electric Light for Railway Purposes	24	321
„ ——— Traction Appliances... ..	26	387, 421
„ Electrical Time-Service	29	144

Raworth, J. S. (*continued*)—

[<i>Discussion</i>] Generation of Electrical Energy for Tramways		
[<i>Reply</i>]	26	493
" Parallel Working	23	280
" Prevention of Interruptions to Electricity Supply	27	506
" Report of Swiss Visit	29	234
" Single-Acting High-Speed Engine	24	481
" Specification of Insulated Conductors, &c. ...	21	212
" Standardisation of Electrical Engineering Plant	29	307
" Supersession of Steam by Electric Locomotive ...	30	155
" Wiring Rules	28	201
Rawson, W. Stepney [<i>Discussion</i>], Problems of Commercial		
Electrolysis	21	549
Ray, E., Award of Students' Premium to (1896)	25	684
Receiving Instrument on a Leaky Telegraph Line, Best Resistance for		
the (<i>W. E. Ayrton</i> and <i>C. S. Whitehead</i>). [<i>See Telegraph</i>] ...	23	327
Reckenzaun, A. [<i>Paper</i>], Load Diagrams of Electric Tramways, and		
the Cost of Electric Traction. [<i>See Tramways</i>] ...	21	293
——, ——, Reply to Discussion on this Paper	21	340
——, ——, Award of Paris Electrical Exhibition Premium to		
(1892)	21	718
——, ——, Announcement of the Death of	22	533
Reflectors, Parabolic, An Electrolytic Process for the Manufacture of		
(<i>S. Cowper-Coles</i>). [<i>See Electrolytic</i>]	27	99
Regenerative Armatures, Reversible, and Short Air-Space Dynamos		
(<i>W. B. Sayers</i>). [<i>See Armatures</i>]	24	122
Registration of Small Currents for Electric Lighting and		
other Purposes (<i>A. H. Gibbings</i>)	27	547
Discussion:— <i>Boot</i> , H. L. P., 572; <i>Everett</i> , W. H., 573;		
<i>Evershed</i> , S., 564; <i>Gibbings</i> , A. H. (in reply), 578; <i>Hirst</i> , H., 570;		
<i>Hunt</i> , H. F., 575; <i>O'Gorman</i> , M., 576; <i>Perry</i> , J., 568; <i>Swan</i> ,		
<i>J. W.</i> (President), 571; <i>Swinburne</i> , J., 569; <i>Wright</i> , A., 569.		
Regulation of Rotary Converters (<i>E. Wilson</i>)	29	430
Regulation of Wiring Rules (<i>C. H. Wordingham</i>)	28	166
Discussion: (with Discussion on Mr. Pigg's and Col.		
Crompton's Papers; see <i>Rules</i>).		
Reluctance of the Teeth in a Slotted Armature (<i>W. B. Hird</i>) ...	29	933
Renfree, T. R., Award of Salomons Scholarship to (1898)	28	639
Repairs to Submarine Cables (<i>F. A. Hamilton</i>)	22	243
—— to the South American Company's Cable off Cape Verde in 1893		
and 1895 (<i>H. Benest</i>). [<i>See Submarine Cable</i>]	26	209
Report, Annual, of Council. [<i>See Annual</i> .]		
—— of Visit to Switzerland. [<i>See Switzerland</i>]	29	195
Researches (Experimental) on Alternate-Current Transformers (<i>J. A.</i>		
<i>Fleming</i>). [<i>See Transformers</i>]	21	594
Resistance, Best, for the Receiving Instrument on a Leaky Telegraph		
Line (<i>W. E. Ayrton</i> and <i>C. S. Whitehead</i>)	23	327
Resolution, Special, Altering Articles of Association	25	615
Resonance with Alternating Currents (<i>A. Russell</i>)	30	596
Return Feeders for Electric Tramways (<i>A. P. Trotter</i>)	27	457
Reversible Boosters, Storage Batteries in Power-Stations Controlled by		
(<i>J. S. Highfield</i>). [<i>See Batteries</i> .]	30	1040
Rheinfelden Power-House, Visit to	29	203

	VOL.	PAGE
Rhodes, W. G.—		
[Discussion] Alternating-Current Induction Motor	29	840
,, Influence of Shape of Applied Potential Difference		
Waves on Iron Losses of Transformers... ..	25	506
,, Training of Electrical Engineers	30	786
Rice, E. W., Jun. [Discussion], Electric Traction Appliances	26	389
Richards, A. E. [Discussion], Electrical Equipment of Ships of War	29	608
Richardson, John—		
[Discussion] Electrical Distribution by the Newcastle-on-Tyne		
Company	21	500
,, Problems of Commercial Electrolysis	21	579, 580
Ricks, G. W. D. [Paper], Electricity Supply Meters	25	57
Rideal, S. [Discussion], Electrolysis of Gold	24	264
Ristori, E. [Discussion], Aluminium as an Electrical Conductor	30	361
Roberts, M. F.—		
[Discussion] Specification of Insulated Conductors	21	196, 225
,, Telegraphs and Telephones at the Paris Exhibition	30	96
Robertson C. J.—		
[Discussion] Apparatus for 200-Volt Circuits	27	143, 174
,, High-Voltage Lamps... ..	25	278
Robertson, G. H.—		
[Discussion] Cause of the Changes of E.M.F. in Secondary		
Batteries	21	443
,, Storage Battery Problems	29	518
Robinson, Foley [Discussion], Electric Traction and Tramways	23	724
——, Mark [Paper], Recent Development of the Single-Acting High-		
Speed Engine for Central-Station Work	24	434, 524
[Discussion] Cost of Electrical Energy	23	473
,, Electric Traction and Tramways	23	697
,, Generation of Electrical Energy for Tramways	26	491
,, Report of Swiss Visit... ..	29	234
,, Single-Acting High-Speed Engine [Reply]	24	524
,, Standardisation of Electrical Engineering Plant	29	309
,, Supersession of Steam by Electric Locomotive	30	150
——, ——, Award of Institution Premium to (1895)	24	628
——, ——, Willans Premium to (1897)	26	720
Rogers, F. M. [Discussion], Oil as an Insulator	21	272
Rose, T. A.—		
[Discussion] Apparatus for 200-Volt Circuits	27	192
,, High-Voltage Lamps	25	276
Rosenthal, J. H. [Discussion], Cost of Electrical Energy	23	531
Rosevere, G. R. [Discussion], Polyphase Equipment of Factories	30	1014
Rossignol, A. le [Discussion], Electrically-driven Machine Tools	30	564
Rotary Converter, A (Ernest Wilson)	28	367
——, ——, A Two-Phase (Ernest Wilson)	29	409
——, ——, Regulation of (Ernest Wilson)	29	430
Rotatory Converters (Silvanus P. Thompson)	27	651
Discussion :—Carus-Wilson, C. A., 712; Esson, W. B., 702;		
Field, M. B., 689, 694; Hobart, H. M., 706; Lawson, A. J.,		
711; Mance, Sir H., 719; Mills, H. L., 731; Mordey, W. M.,		
710; Parshall, H. F., 721; Sayers, W. B., 728; Scott, E. K.,		
716; Swan, J. W. (President), 737; Swinburne, J., 701;		
Thomas, Eustace, 716; Thompson, S. P. (in reply), 732;		
Wilson, E., 725.		

TRANSACTIONS.

ROW—RYM 57

	VOL.	PAGE
Rowland's Multiplex Telegraphs at Paris Exhibition (<i>J. Gavey</i>) ...	30	74
Royal-Dawson, W. G. [<i>Paper</i>], Alternating Currents of very High Frequency ...	28	655
———, Award of Students' Premium to (1899) ...	28	639
Royal Institution, Lecture delivered at, by Nikola Tesla ...	21	51
Rules for Local Sections ...	29	944, 946
Rules for the Regulation of the Wiring of Premises for Connection to Public Supply Mains (<i>J. Pigg</i>) ...	28	122
<i>Discussion on Mr. Pigg's, Mr. Wordingham's, and Col. Crompton's Papers on Wiring Rules</i> :—Andrews, J. D. F., 206; Andrews, O. M., 216; Atkinson, L. B., 203; Ayrton, W. E., 183, 198, 205, 237; Baily, F. G., 217; Bathurst, F., 180; Berry, H. H., 212; Bright, C., 209; Brown, F., 190; Cockburn, A. C., 220; Cottam, G. H., 205; Crompton, R. E. 175 (in reply to discussion on his Paper), 236, 237; Drake, B., 176; Evershed, S., 212; Fawcus, W. P. J., 237; Galsworthy, M. H., 189; Gawthorp, C. A., 184; Hirst, H., 189; Howard, A. H., 178; Human, H., 184; Langridge, L. J., 186; Leach, H. L., 219; Lundberg, G. C., 222; Mavor, S., 207, 237; Mordey, W. M., 211; O'Gorman, M., 223; Pigg, J. (in reply), 229; Raphael, F. C., 187; Raworth, J. S., 201; Ruthven-Murray, E. T., 187; Sheppard, J., 186, 213; Shoolbred, J. N., 208; Steinitz, J. J., 217; Swinton, A. A. C., 209; Thompson, S. P. (Chairman), 229; Wallis-Jones, R. J., 187; Webber, Gen. C. E., 178, 237; Wordingham, C. H., 176 (in reply to discussion on his Paper), 231; Wright, A., 211.		
Rules, Wiring, Notes on (<i>F. Broadbent</i>). [<i>Newcastle Local Section</i>] [<i>See Wiring</i>] ...	30	1130
———, ———, Regulation of (<i>C. H. Wordingham</i>) ...	28	166
———, ———, The Institution (<i>Col. R. E. Crompton</i>) ...	28	173
Russell, A.—		
[<i>Papers</i>] Capacities of Polyphase Cables ...	30	1022
„ How Condenser and Choking-Coil Currents Vary with the Shape of the Wave of the Applied E.M.F. ...	29	154
„ Note on Resonance with Alternating Currents ...	30	596
[<i>Discussion</i>] Alternate-Current Measurement ...	30	919
„ Capacity in Alternate-Current Working ...	30	438
„ Rapid Variations in Current in Direct-Current Arc ...	30	276
Russell, A., Award of Premium to (1900) ...	29	863
———, C. N. [<i>Discussion</i>], Electric Wiring ...	25	122
———, Earl [<i>Discussion</i>], Electrical Distribution by the Newcastle-on-Tyne Company ...	21	499
Russell, Stuart A.—		
[<i>Discussion</i>] Alternate Currents ...	21	259
„ Capacity in Alternate-Current Working ...	30	433
„ Insulation on Cables ...	30	695
„ Load Diagrams of Electric Tramways ...	21	316
„ Specification of Insulated Conductors, &c. ...	21	219
„ Standardisation of Electrical Engineering Plant ...	29	325
Ruthven-Murray, E. T. [<i>Discussion</i>], Wiring Rules ...	28	187
Ruti Silk-Weaving Factory, Visit to ...	29	202
Rymer-Jones, J. [<i>Discussion</i>], Repairs to the South American Company's Cable ...	26	293

S.

	VOL.	PAGE
Safety Lamps, Miner's, Electrical (<i>S. F. Walker</i>). [See <i>Miner's</i>] ...	30	815
Sale, Col. M. T. [<i>Discussion</i>], Single-Acting High-Speed Engine ...	24	489
Salomons, Sir David—		
[<i>Papers</i>] Description of a New Form of "Direct-to-Alternating Current-Transformer" of very High Frequency ...	21	709
,, New form of Portable Photometer. [See <i>Photometer</i>] ...	22	197
[<i>Discussion</i>] Earth Currents in India	22	223
,, Electric Wiring	25	53, 213
,, Electrical Distribution by the Newcastle-on-Tyne Company	21	495
,, Light of the Electric Arc	21	397
,, Magnetic Tester for Measuring Hysteresis in Sheet Iron	24	410
,, Portable Photometer [<i>Reply</i>]	22	213
Salomons Scholarship, Conditions of Award	21	596
———, Awarded to Mr. C. H. C. Woodhouse (1892)	21	718
———, ——— Messrs. F. R. Lydall and J. T. Morris (1893)...	22	574
———, ——— Mr. E. Hoadley (1894)	24	2
———, ——— Messrs. P. R. Cobb and J. E. Petavel (1895) ...	24	628
———, ——— Mr. E. W. Marchant (1896)	25	684
———, ——— Mr. E. E. Tasker (1897)	26	720
———, ——— Messrs. T. R. Renfree and H. J. Tomlinson (1898)	28	639
———, ——— Mr. H. J. Thomson (1899)	28	639
———, ——— Mr. R. P. Howgrave-Graham (1900)	29	863
———, ——— Messrs. J. D. Griffin and H. A. Skelton (1901)	30	1215
Sankey, Capt. H. R.—		
[<i>Discussion</i>] Electric Light for Railway Purposes	24	333
,, Electric Traction and Tramways	23	701
,, Parallel Working	23	294
,, Single-Acting High-Speed Engine	24	518
Sayer, G. H. [<i>Discussion</i>], Dublin Corporation Electric Light Scheme	30	543
Sayers, H. M. [<i>Paper</i>], Calculation of Distributing Systems of Electric Traction under British Conditions	29	692, 730
[<i>Discussion</i>] Calculation of Distributing Systems of Electric Traction [<i>Reply</i>]	29	730
,, Capacity in Alternate-Current Working	30	432
,, Cost of Electrical Energy	27	415
,, Storage Batteries controlled by Reversible Boosters	30	1079
———, ———, Award of Premium to (1900)	29	863
Sayers, R. M., Award of Students' Premium to (1897)...	26	719
———, W. B.—		
[<i>Papers</i>] Arc Lighting from 250-Volt Supply	29	382
,, On the Prevention and Control of Sparking; Con- tinuous-Current Dynamos without Winding on the Field Magnets, and Constant-Pressure Dynamos without Series Winding	22	377, 421
,, Appendix to the above Paper	22	435
,, Reversible Regenerative Armatures and Short-Air- Space Dynamos	24	122, 179

	VOL.	PAGE
Sayers, W. B. (<i>continued</i>)—		
[<i>Discussion</i>] Alternate-Current Transformers ... 21, 707	22	83
,, Direct-Current <i>versus</i> Three-phase Distribution ...	30	323
,, Dynamos	26	579
,, Electricity Supply	30	115
,, Prevention and Control of Sparking [<i>Reply</i>] ...	22	421
,, Reversible Regenerative Armatures [<i>Reply</i>] ...	24	179
,, Rotatory Converters	27	728
,, Use of Electricity in Coal Mines	30	878
———, ———, Award of Institution Premium to (1893)	22	573
Schaffhausen Power-House, Visit to	29	207
——— Water-Power, Utilisation of (<i>A. Amsler</i>). [<i>See Water-Power</i>] ...	29	175
——— Worsted Mills, Visit to	29	202
Schattner, E. B. [<i>Discussion</i>], Frictionless Motor Meter	29	786
Scholarship, David Hughes. [<i>See Hughes.</i>]		
———, Salomons. [<i>See Salomons.</i>]		
Schönheyder, W. [<i>Discussion</i>], Cost of Electrical Energy	23	489
Science, Applications of (<i>G. F. Fitzgerald</i>)	29	394
Scott, E. Kilburn—		
[<i>Paper</i>] Notes on Electric Traction by Three-phase Alternating		
Currents	28	108
[<i>Discussion</i>] Apparatus for 200-Volt Circuits	27	191
,, Calculation of Distributing Systems of Electric		
Traction	29	733
,, Dynamos	26	595
,, Design of Electric Railway Motors	27	625
,, Electric Traction Appliances	26	419
,, Insulation on Cables	30	692
,, Magnetic Balance for Tests of Permeability ...	27	542
,, Prevention of Interruptions to Electricity Supply	27	517
,, Relative Size, Weight, and Price of Dynamo-		
electric Machines	26	170
,, Report of Swiss Visit	29	244
,, Rotatory Converters	27	716
,, Storage Batteries controlled by Reversible Boosters	30	1087
,, Supersession of Steam- by Electric-Locomotive ...	30	191
,, Utilisation of Schaffhausen Water-Power ...	29	184
Screens for Electric and other Apparatus, Transparent Conducting		
(<i>W. E. Ayrton and T. Mather</i>)	23	376
Seabrook, A. H. [<i>Discussion</i>], Supersession of Steam- by Electric-		
Locomotive	30	183
Searchlights for Use in Ships of War (<i>C. E. Grove</i>)	29	550
Secondary (see <i>Storage</i>) Battery Problems (<i>E. J. Wade</i>)	29	460
——— Batteries, On the Cause of the Changes of Electro-motive Force		
in (<i>J. H. Gladstone and Walter Hibbert</i>). [<i>See Batteries</i>] ...	21	412
Secretary, Appointment of W. G. McMillan as (1897)	26	723
———, Retirement of F. H. Webb as (1897)	26	723
———, Retiring Pension to	26	731
———, The late (Mr. F. H. Webb), Testimonial and Address to ...	27	239
Segundo, E. C. de—		
[<i>Discussion</i>] Cost of Electrical Energy	23	502, 526
,, Supersession of Steam- by Electric-Locomotive ...	30	174
Selenium Cell, Notes on a (<i>E. O. Walker</i>)	22	143

	VOL.	PAGE
Sellon, R. P.—		
[Paper], Standardisation of Electrical Engineering Plant	29	291, 341
[Discussion] Standardisation of Electrical Engineering Plant		
[Reply]	29	341
The Electrical Power Bills of 1900; Before and		
After	30	498
Sellon, Stephen—		
[Discussion] Electric Traction Appliances	26	397
,, Load Diagrams of Electric Tramways, &c.	21	334
,, Standardisation of Electrical Engineering Plant	29	334
Sennett, A. R. [Discussion], Magnetic Space Telegraphy	27	906
Shallenberger, O. B., Obituary Notice of... ..	28	681
Sharp, Archibald—		
[Discussion] Cost of Electrical Energy	23	542
,, Electric Traction and Tramways	23	737
Sharp, S. [Discussion], Electric Traction by Surface Contacts	28	259
Sheardown, P. S., Award of Students' Premium to (1897)	26	719
Sheppard, J. [Discussion], Electric Wiring	25	157
,, Wiring Rules	28	186, 213
Ships of War, Electrical Equipment of (C. E. Grove)	29	530
Discussion:—Allingham, G. C., 612; Creak, Capt. E. W., 602;		
Crompton, R. E., 605; Evershed, S., 603; Grove, C. E. (in		
reply), 621; Lawson, A. J., 613; Mackrow, G. C., 620;		
Noakes, L. F., 615; Richards, A. E., 608; Swinton, A. A. C.,		
611; Walker, S. F., 616; Wilde, Dr. H., 614.		
Shoolbred, J. N.—		
[Discussion] Apparatus for 200-Volt Circuits	27	144
,, Cost of Electrical Energy	23,	505
,, ——— Steam Raising and of Electrical Energy	29	96
,, Electric Light for Railway Purposes	24	351
,, Electrically Interlocking Railway Signals	26	139
,, Electric Wiring	25	149
,, The Light of the Electric Arc	21	401
,, Single-Acting High-Speed Engine, &c.	24	505
,, Storage Batteries controlled by Reversible Boosters	30	1075
,, Utilisation of Water Power	25	547
,, Wiring Rules	28	208
Short, M. [Discussion], Cost of Electrical Energy	27	430
Shunt Box for Galvanometers, A Universal (W. E. Ayrtton and T.		
Mather). [See Galvanometers]	23	314
Siemens, Alexander—		
[Papers] Inaugural Address as President... ..	23	
,, Some Experimental Investigations of Alternate Cur-		
rents. [See Alternate]	21	164,
,, Explanatory Remarks on the above Paper	21	2
[Discussion] Capacity Measurements of Long Submarine		
Cables	28	41
,, Distribution of Power by Alternate-Current Motors	22	34
,, Electric Light for Railway Purposes	24	34
,, ——— Lighting of the City of London	23	186
,, Electrical Transmission of Power from Niagara	22	530
,, Experimental Investigation of Alternate Currents		
[Reply]	21	264

Siemens, Alexander (*continued*)—[*Discussion*] Magnetic Tester for Measuring Hysteresis in Sheet

Iron	...	...	...	...	...	24	418
„ Parallel Working	...	...	...	...	...	23	314
„ The Prevention and Control of Sparking, &c.	...	...	...	...	...	22	417, 431
„ Single-Acting High-Speed Engine	...	...	...	...	...	24	492
„ Specification of Insulated Conductors, &c...	...	...	...	...	...	21	215
„ Supersession of Steam- by Electric- Locomotive	...	...	...	...	...	30	172
„ Testing the Magnetic Qualities of Iron	...	...	...	...	...	23	227
„ Utilisation of Water Power	...	...	...	...	...	25	546
—, —, In Proposing Vote of Congratulation to Electrical Engineers, R.E., on return from Active Service	...	...	...	...	...	30	303
Siemens, Dr. Werner von, Announcement of the Death of	...	...	...	...	...	21	714
— and Halske's Conditions for Satisfactory Telephone Exchange Working	...	...	...	...	...	30	85
Signals on Railways, Electrically Interlocking the Block and Mechanical (<i>F. T. Hollins</i>)	...	...	...	...	...	26	37
<i>Discussion</i> :—Addison, Col. G. W., 125; Goodenough, H. T., 145; Hollins, F. T. (in reply), 149; Ireland, T., 137; Langdon, W., 83, 116; Leonard, W., 147; McMahon, P. V., 144; Mance, Sir Henry (President), 79, 159; Marindin, Major F. A., 116; Shoolbred, J. N., 139; Spagnoletti, C. E., 128, 143; Webber, General C. E., 140; Weekes, R. W., 144; Winter, W. H., 135, 142; Wyles, F., 80.							
Sillar, G. C. [<i>Discussion</i>], Electric Traction by Surface Contacts	...	...	...	...	...	28	265
Sinclair, A. [<i>Discussion</i>], The Problems of Commercial Electrolysis	...	...	...	...	...	21	585
—, Dane—	...	...	...	...	...	...	...
[<i>Paper</i>] Telephone Exchanges and their Working	...	...	...	...	...	25	300, 372
[<i>Discussion</i>] Magnetic Space Telegraphy	...	...	...	...	...	27	947
„ Telephone Exchanges and their Working [<i>Reply</i>]	...	...	...	...	...	25	372
„ — Trunk Line System in Great Britain	...	...	...	...	...	25	654, 667
„ Telegraphs and Telephones at the Paris Exhibition	...	...	...	...	...	30	99
Single-Acting High-Speed Engine for Central-Station Work, Recent Development of (<i>Mark Robinson</i>). [<i>See Engine</i>]	...	...	...	...	...	24	434
Size, Weight, and Price of Dynamo-electric Machines, Relative (<i>Ernest Wilson</i>). [<i>See Dynamo</i>]	...	...	...	...	...	26	160
Skelton, H. A., Award of Salomons Scholarship to (1901)	...	...	...	...	...	30	1215
Sleigh, J. P. [<i>Discussion</i>], Wiring Rules...	...	...	...	...	...	30	1156
Smith, B., Obituary Notice of	...	...	...	...	...	29	956
—, E. Wythe—	...	...	...	...	...	...	...
[<i>Discussion</i>] Accumulator Traction	...	...	...	...	...	26	757
„ Cause of Changes of E.M.F. in Secondary Batteries	...	...	...	...	...	21	453
Smith, M. Holroyd—	...	...	...	...	...	...	...
[<i>Discussion</i>] Accumulator Traction	...	...	...	...	...	26	710
„ Electric Traction and Tramways	...	...	...	...	...	23	705
„ Electric Traction Appliances	...	...	...	...	...	26	399
Smith, R. H.—	...	...	...	...	...	...	...
[<i>Discussion</i>] Accumulator Traction	...	...	...	...	...	26	751
„ Cost of Electrical Energy	...	...	...	...	...	27	392
„ Cost of Steam Raising and of Electrical Energy	...	...	...	...	...	29	105
„ Design of Electric Railway Motors	...	...	...	...	...	27	614
„ Electric Locomotives, &c.	...	...	...	...	...	28	621
„ Electric Traction by Surface Contacts	...	...	...	...	...	28	265

	VOL.	PAGE
Smith, W. S. [<i>Discussion</i>], Capacity Measurements of Long Submarine Cables	28	510
Snell, Albion T. [<i>Paper</i>] Distribution of Power by Alternate-Current Motors	22	280
[<i>Discussion</i>] Distribution of Power by Alternate-Current Motors		
[<i>Reply</i>]	22	317, 344
,, Electric Traction Appliances	26	421
,, Electric Wiring	25	164
,, Load Diagrams of Electric Tramways	21	322
,, Prevention and Control of Sparking, &c.	22	414
,, Reversible Regenerative Armatures, and Short Air-Space Dynamos	24	178
,, Use of Electricity in Coal Mines	30	879
Snell, J. F. C.—		
[<i>Discussion</i>] Cost of Electrical Energy	27	429
,, High-Voltage Lamps... ..	25	277
,, Standardisation of Electrical Engineering Plant... ..	29	337
Solomon, M., Award of Students' Premium to (1898)	28	638
Somerville, G. J. [<i>Discussion</i>], Telephone Exchanges	25	370
South African Society of Electrical Engineers, in reference to Death of Dr. John Hopkinson	27	691
South American Company's Cable off Cape Verde, Some Repairs to, in 1893 and 1895 (H. Benest). [See <i>Submarine Cable</i>]	26	209
Sowter, W. J. Unwin-[<i>Discussion</i>], Polyphase Equipment of Factories	30	1012
Spagnoletti, C. E.—		
[<i>Discussion</i>] Electrically Interlocking Railway Signals	26	128, 143
,, Railway Telegraphs	25	413
Sparking, Prevention and Control of ; Continuous-Current Dynamos without Winding on the Field Magnets ; and Constant-Pressure Dynamos without Series Winding		
(W. B. Sayers)	22	377
<i>Discussion</i> :—Ayrton, W. E., 409 ; Chamen, A., 417 ; Crompton, R. E., 419 ; Forbes, George, 415, 426 ; Housman, R. H., 399 ; Mavor, Henry A., 441 ; Mordey, W. M., 403, 418 ; Preece, Sir W. H. (President), 432 ; Sayers, W. B. (in reply), 421 ; Siemens, Alexander, 417, 431 ; Snell, Albion T., 414 ; Swinburne, J., 397, 420 ; Thompson, S. P., 394 ; Trotter, A. P., 421 ; Walker, Sydney F., 404.		
Appendix to the above Paper	22	435
Sparkless Reversal in Dynamos (H. N. Allen)	27	209
Sparks, C. P.—		
[<i>Discussion</i>] Alternate-Current Transformers	22	22
,, Capacity in Alternate-Current Working	30	397
,, Distribution of Power by Alternate-Current Motors	22	320
,, Parallel Working	23	283
,, Polyphase Sub-station Machinery	30	763
,, Testing the Magnetic Qualities of Iron	23	219
,, Exhibition of Brown, Boveri & Co's. Motors	22	320
Sparks, J. Noel [<i>Discussion</i>], Electro-chemical Treatment of Ores	27	88
Special General Meetings of Members, Alteration of Articles of Association by	27	968
only—June 15th and July 6th, 1896	25	615
Meeting of Members and Associates—July 6th, 1896	25	617

	VOL.	PAGE
Specific Inductive Capacity of Dielectrics	30	666
Speirs, C. W. [<i>Discussion</i>], Electrolytic Process for the Manufacture of Parabolic Reflectors	27	111, 113, 114
Spiez, Visit to Kander Power-House at	29	212
Sprague, Frank [<i>Discussion</i>], Supersession of Steam- by Electric- Locomotive	30	175
Standard Frequency (L. B. Stillwell)	28	364
———, Report by Committee on Uniformity	28	272
Standardisation of Electrical Engineering Plant (<i>R. Percy Sellon</i>)	29	291
<i>Discussion</i> :—Addenbrooke, G. L., 330; Andrews, L., 324; Ayrton, W. E., 333; Bathurst, F., 339; Birks, L., 327; Blackburn, A. B., 305; Bright, C., 337; Crompton, R. E., 304; Esson, W. B., 319, 334; Evershed, S., 322; Ferranti, S. Z. de, 312; Geipel, W., 340; Grove, C. E., 331; Hammond, R., 311; Johnson, E. H., 307; Kingsbury, J. E., 336; Levin, A. E., 329; Lewis, J. Slater, 306; Raworth, J. S., 307; Robinson, Mark, 309; Russell, S. A., 325; Sellon, R. P. (in reply), 341; Sellon, S., 334; Snell, J. F. C., 337; Webber, General C. E., 313, 315.		
Stansstad-Engelberg Electric Railway, Visit to	29	221
Steam Locomotive, Supersession of by Electric Locomotive (<i>W. Langdon</i>). [<i>See Locomotive</i>]	30	124
——— -Power, Application of, to Generation of Electric Energy (<i>J. S. Raworth</i>). [<i>Manchester Local Section</i>]	30	971
——— Raising, Cost of (<i>J. Holliday</i>). [<i>See Cost</i>]	29	38
Stearn, C. H.—		
[<i>Discussion</i>] Apparatus for 200-Volt Circuits	27	149
,, High-Voltage Lamps... ..	25	271
Steele, L. J.—		
[<i>Discussion</i>] Magnetic Tester for Measuring Hysteresis in Sheet Iron	24	423
,, Testing the Magnetic Qualities of Iron	23	214
Steep-Grade Traction, Electric, in Europe (<i>C. S. Du Riche Preller</i>). [<i>See Traction</i>]	23	684
Steering Engines, Electrical (<i>C. E. Grove</i>)	29	588
Steiger, Alph., Utilisation of Water Power, especially with a Small Fall, with some Examples of Plants for the Generation of Electrical Energy	25	521
———, ———, Reply to Discussion on this Paper	25	555
Steinitz, J. J. [<i>Discussion</i>], Wiring Rules	28	217
Stelje's Type-Writing Telegraph, Demonstration by W. T. Goolden	30	103
Stevenson, C. A.—		
[<i>Discussion</i>] Magnetic Space Telegraphy	27	950
,, Wireless Telegraphy	28	306
Stewart, A. [<i>Discussion</i>], Electric Driving	29	898
Stillwell, L. B., Note on Standard Frequency	28	364
Stockall, W. H. [<i>Discussion</i>], Electrical Time-Service	29	145
Storage Battery Problems (<i>E. J. Wade</i>). [<i>See Battery</i>]	29	460
——— Batteries Controlled by Reversible Boosters (<i>J. S. Highfield</i>). [<i>See Batteries</i>]... ..	30	1040
———, Use of, in connection with Electric Tramways (<i>G. A. Grindle</i>). [<i>Manchester Local Section</i>]	30	1098

	VOL.	P.
Stotherd, General R. H., C.B., Announcement of the Death of ...	24	
Stothert, J. K. [<i>Discussion</i>], Light of the Electric Arc... ..	21	
Stromeyer, C. E. [<i>Discussion</i>], Cost of Steam Raising and of Electrical Energy	29	
Student-Reporters, at Paris Exhibition	30	1
Students' Section, Visit to Manchester	30	1
Submarine Cables, Repairs to (<i>F. A. Hamilton</i>)	22	
Submarine Cable, Repairs to the South American Company's, off Cape Verde in 1893 and 1895 (<i>H. Benest</i>) ...	26	
<i>Discussion</i> :—Benest, H. (in reply), 304; Bright, C., 260; Buchanan, J. Y., 252; Donovan, H. C., 275; Goodsall, Capt., 277, 288; Gray, R. K., 283; Lugar, Capt., 280; Mance, Sir Henry (President), 301; Milne, J., 288; Morton, Capt. D., 298; Parsoné, E. W., 289; Preece, Sir W. H., 267; Rymer-Jones, J., 293; Thomson, Capt. A. S., 276; Warren, T. Bruce, 296; Webb, E. March, 270; Wharton, Admiral W. J. L., 255; Wilkinson, H. D., 299; Wilson-Barker, Capt., 273.		
Submarine Cable Working, Disturbance of, by Electric Tramways (<i>A. P. Trotter</i>)	26	
<i>Discussion</i> :—Ayrton, W. E., 521; Bright, C., 515; Forbes, G., 529; Gadsby, C. H., 519, 529; Luke, P. V., 518; Mance, Sir Henry (President), 530; Preece, Sir W. H., 517; Winter, C. E., 530.		
Submarine Cables, Long Capacity Measurements of (<i>J. Elton Young</i>)	28	
<i>Discussion</i> :—Bright, C., 496; Dearlove, A. L., 501; Murphy, W. J., 489, 495, 503; Siemens, A., 491; Smith, W. S., 501; Taylor, F. A., 500; Thompson, S. P. (Chairman), 501, 507.		
Substation Machinery, Polyphase; Some Notes on (<i>A. C. Eborall</i>)	30	
<i>Discussion</i> :—Carus-Wilson, C. A., 760; Cruise, E. G., 761; Eborall, A. C. (in reply), 766; Edwards, F. J., 763; Esson, W. B., 758; Ferranti, S. Z. de, 757; Field, M. B., 753; Leach, H. L., 763; Leake, H. C., 764; Patchell, W. H., 762; Sparks, C. P., 763; Thompson, S. P., 755; Wilson, E., 765.		
Sullivan, H. W. [<i>Discussion</i>], Wireless Telegraphy	28	
Sulman, H. L. [<i>Discussion</i>], Electro-chemical Treatment of Ores	27	70, 71
Sulzer Bros., Visit to Works of	29	
Summers, C. H., Obituary Notice of	28	
Sumpner, W. E.—		
[<i>Discussion</i>] Alternate-Current Transformers	21	
,, Light of the Electric Arc	21	
,, Polyphase Equipment of Factories... ..	30	
,, Testing and Working Alternators	22	
Supply, Electricity (<i>W. A. Chamen</i>). [<i>See Electricity</i>]	30	
Supply, Electricity, Prevention of Interruptions to (<i>L. Andrews</i>)	27	
<i>Discussion</i> :—Andrews, L. (in reply), 519; Bathurst, F., 514; Chattock, R. A., 509; Lawson, A. J., 510; Raphael, F. C., 511; Raworth, J. S., 506; Scott, E. K., 517; Thompson, S. P. (Chairman), 517; Weekes, R. W., 516.		
<i>Supply, Electricity</i> (Public), Method of Charging for (<i>W. W. Lackie</i>)	29	
<i>Surface Contacts, Electric Traction</i> by (<i>M. Walker</i>). [<i>See Traction</i>]	28	

	VOL.	PAGE
Surgical and Medical Practice, Applications of Electricity in (H. Lewis Jones). [See Medical]	29	346
Swallow, M. G. S. [Discussion], Report of Swiss Visit... ..	29	231
Swan, J. W. [Paper], Inaugural Address as President... ..	27	8
[Discussion] Accumulator Traction	26	708
„ Apparatus for 200-Volt Circuits	27	136, 187
„ Cost of Electrical Energy	27	396, 422
„ Design of Electric Railway Motors	27	628
„ Electric Intercommunication in Railway Trains... ..	27	776, 795
„ ——— Locomotives	28	632
„ ——— Tramways	27	480
„ Electro-chemical Treatment of Ores	27	98
„ Electrolytic Process for the Manufacture of Parabolic Reflectors	27	112, 113, 115
„ Experiments on Alternate-Current Arcs by Aid of Oscillographs	28	468, 474
„ High-Voltage Lamps, &c.	25	268
„ Hissing of the Electric Arc	28	431, 450
„ Magnetic Balance for Tests of Permeability	27	539
„ Magnetic Space Telegraphy... ..	27	851
„ Problems of Commercial Electrolysis	21	576
„ Registration of Small Currents	27	571
———, ———, Elected Honorary Member (1900)	29	692
———, ———, in Proposing Vote of Condolence with Relatives of the Electrical Engineers, R.E., who fell whilst on Active Service	30	305
Swinburne, James [Paper], The Problems of Commercial Electrolysis. [See Electrolysis]	21	507, 588
[Discussion] Alternate Currents	21	241
„ Alternate-Current Transformers	21	694
„ Aluminium as an Electrical Conductor	30	360
„ Apparatus for 200-Volt Circuits	27	161
„ Calculation of Distributing Systems of Electric Traction	29	734
„ Capacity in Alternate-Current Working	30	408
„ Cause of Changes of E.M.F. in Secondary Batteries	21	455
„ Distant Electric Power Transmission	29	666
„ Distribution of Power by Alternate-Current Motors	22	324, 336
„ Dynamos	26	613
„ Electrical Transmission of Power from Niagara	22	565
„ Electrolysis of Gold	24	266
„ Insulation on Cables	30	684
„ Light of the Electric Arc	21	384
„ Load Diagrams of Electric Tramways, &c.	21	339
„ Magnetic Balance for Tests of Permeability	27	538
„ Oil as an Insulator	21	288
„ Prevention and Control of Sparking, &c.	22	397, 420
„ Problems of Commercial Electrolysis [Reply]	21	588
„ Registration of Small Currents	27	569
„ Report of Swiss Visit... ..	29	235
„ Rotatory Converters	27	701
„ Specification of Insulated Conductors, &c.	21	225
„ Storage Battery Problems	29	510
„ Testing and Working Alternators	22	177

	VOL.	PAGE
Swinton, A. A. Campbell.		
[Discussion] Apparatus for 200-Volt Circuits	27	171
,, Electric Wiring	25	48
,, Electrical Equipment of Ships of War	29	611
,, Electrical Power Bills of 1900	30	501
,, Experiments on Alternate-Current Arcs by Aid of Oscillographs	28	467
,, High-Voltage Lamps... ..	25	281
,, Oil as an Insulator	21	267
,, Supersession of Steam- by Electric- Locomotive—	30	169
,, Telephone Trunk Line System in Great Britain ...	25	661
,, Wireless Telegraphy	28	305
,, Wiring Rules	28	209
[Demonstration] Wehnelt Electrolytic Contact-Breaker ...	28	317, 320
Swiss Locomotive Works, Visit to... ..	29	201
——— Visit, Exhibition of Photographs... ..	29	37
Switch-Board, Telephone-, Origin and Development of (<i>J. E. Kings-</i> <i>bury</i>). [See <i>Telephone</i>]	24	36
Switch-Boards for Use in Ships of War (<i>C. E. Grove</i>)	29	535
Switch Contacts, Metal Electrodes (<i>W. Duddell</i>)	30	252
Switches for 200-Volt Circuits. [See <i>Lamps</i>]	27	126
Switzerland, Report of Swiss Visit Committee on Visit of Institution to	29	195
<i>Factories Visited :—</i>		
Alioth Electricity Company, 198; Brown, Boveri & Co., 198; Maschinenfabrik Oerlikon, 199; Escher Wyss & Co., 200; Sulzer Bros., 200; Swiss Locomotive Works, 201; Georg Fischer's Steel Works, 201; Rütli Silk - Weaving Factory, 202; Schaffhausen Worsted Mills, 203.		
<i>Power and Lighting Stations Visited :—</i>		
Rheinfelden Power-House, 203; Zürich Central Station, 205; Schaff- hausen Power-House, 207; Rathausen Central Station, 210; Kander Power-House (Spiez), 212.		
<i>Electric Tramways and Railways Visited :—</i>		
Zürich City Tramways, 215; Zürich-Oerlikon-Seebach Electric Tramway, 217; Zürich Industrie Quartier Electric Tramway, 219; Luzern Electric Tramways, 219; Stansstad-Engelberg Electric Railway, 221; Jungfrau Electric Railway, 222; Burgdorf-Thun Electric Railway, 224.		
<i>Discussion on Report :—</i>		
Addenbrooke, G. L., 253; Birks, L., 233; Carus-Wilson, C. A., 231; Crompton, R. E., 225; Ferranti, S. Z. de, 243; Field, M. B., 246; Gaster, L., 255; Hammond, R., 229; Levin, A. E., 251; Mordey, W. M., 255; Perry, J., 257; Raworth, J. S., 234; Robinson, Mark, 234; Scott, E. K., 244; Swallow, M. G. S., 231; Swinburne, J., 235; Trotter, A. P., 253.		
———, Visit to, Report of Meeting in Zürich	29	175
Sykes, J. R. [Discussion], Dublin Corporation Electric Light Scheme	30	543
Synchronising of Alternators (<i>M. R. Gardner and R. P. Howgrave-</i> <i>Graham</i>)... ..	28	685

T.

	VOL.	PAGE
Tandy, F. [<i>Discussion</i>], Experiments on Alternate-Current Arcs by Aid of Oscillographs	23	468
Tanning Operations, Influence of Electricity in (<i>C. K. Falkenstein</i>) ...	22	225
Tarrant, Kenneth J. [<i>Discussion</i>], Electric Wiring	25	169
Tasker, E. E., Award of Salomons Scholarship to (1897)	26	720
———, ———, Award of Students' Premium to (1898)	28	638
Tasker, Howard.—		
[<i>Discussion</i>] Electric Lighting of the City of London	23	183
" Electric Wiring	25	161
Tavaria, H. K., Obituary Notice of	30	1248
Taylor, A. M.—		
[<i>Discussion</i>] Calculation of Distributing Systems of Electric Traction	29	729
" Design of Electric Railway Motors... ..	27	608
" Electric Locomotives... ..	28	615
" Polyphase Equipment of Factories... ..	30	1015
" Supersession of Steam- by Electric- Locomotive	30	186
Taylor, C. Percy, Award of Institution Premium to (1896)	25	684
———, ———, S. Beeton, and J. M. Barr [<i>Paper</i>], Experimental Tests on the Influence of the Shape of the Applied Potential Difference Wave on the Iron Losses of Transformers	25	474
———, ———, Reply to Discussion on the above Paper	25	516
Taylor, F. A. [<i>Discussion</i>], Capacity Measurements of Long Submarine Cables	28	500
———, F. H. [<i>Discussion</i>], Electric Wiring	25	159
Teed, F. L. [<i>Discussion</i>], Electro-chemical Treatment of Ores	27	67
Telegraph, The First Practical—viz., between Euston and Camden Town (<i>Sir W. H. Preece</i>)	26	633
Telegraph Line, Best Resistance for the Receiving Instrument on a Leaky (<i>W. E. Ayrton and C. S. Whitehead</i>)	23	327
<i>Discussion</i> :—Ayrton, Professor W. E. (in reply), 373; Granville, W. P., 370; Hughes, Professor, 370.		
Telegraph Line, Lightning on the, in India (<i>P. V. Luke</i>)	23	781
——— Lines, Daily Insulation Testing of (<i>Sir W. H. Preece</i>)	24	546
———, Multiplex, Rowlands, at Paris Exhibition (<i>J. Gavey</i>)... ..	30	74
———, Photo-Autographic, Virág and Pollak's, at Paris Exhibition (<i>J. Gavey</i>)	30	79
———, Type-Writing, Stelje's (<i>W. T. Goolden</i>)... ..	30	100
Telegraphphone, Poulsen's (<i>J. Gavey</i>)	30	88, 969
Telegraphs and Telephones at the Paris Exhibition (<i>J. Gavey</i>)	30	73
<i>Discussion</i> :—Gavey, J. (in reply), 101; Hammer, W. J., 95; Heaviside, A. W., 97; Kingsbury, J. E., 99; Preece, Sir W. H., 93; Roberts, M. F., 96; Sinclair, D., 99; Thompson, S. P., 101.		
Telegraphs, Field, with the Chitral Relief Force, 1895 (<i>F. E. Dempster</i>)	25	663

Telegraphs, Railway, with Special Reference to Recent Improvements (<i>W. Langdon</i>)	...	...	...	...	25
<i>Discussion</i> :—Bright, Charles, 418; Clement, A. F., 438; Fletcher, G. E., 428; Goldstone, C., 418; Hampson, Stuart, 426; Hollins, F., 422; Langdon, W. (in reply), 440; Leonard, W., 427; Spagnoletti, C. E., 413; Treuenfeld, R. von Fischer, 420; Wyles, F., 412.					
Telegraphy, Ætheric (<i>Sir W. H. Preece</i>), and	...	...	...	...	27
Telegraphy by Magnetic Induction (<i>S. Evershed</i>)	...	...	...	...	27
<i>Discussion</i> :—(See Discussion on <i>Improvements in Magnetic Space Telegraphy</i>).					
Telegraphy, Magnetic Space, Improvements in (<i>Oliver Lodge</i>)	...	...	...	...	27
<i>Discussion</i> :—Adams, A. J. S., 960; Ayrton, W. E., 912; Brett, Capt. W. P., 944; Bright, C., 955; Brown, A. C., 948; Evershed, S., 887, 924, 963; Fleming, J. A., 899; Granville, W. P., 938; Lodge O. (in reply), 851, 915, 924, 961; Mance, Sir H., 905; Preece, Sir W. H., 849, 897; Sennett, A. R., 906; Sinclair, D., 947; Stevenson, C. A., 950; Swan, J. W. (President), 851; Webber, General C. E., 903; Whitehead, C. S., 904.					
Telegraphy, Wireless (<i>G. Marconi</i>)	...	...	...	...	28
<i>Discussion</i> :—Brett, Capt. W. P., 295; Brown, A. C., 305; Carter, E. T., 304; Evershed, S., 294; Fleming, J. A., 291; Gavey, J., 300; Granville, W. P., 295, 304; Kennedy, Capt. J. N. C., 296; Marconi, G. (in reply), 311; Miller, L. B., 305; Murray, E., 293; O'Gorman, M. 303; Perry, J. (Chairman), 291, 297; Stevenson, C. A., 306; Sullivan, H. W., 294; Swinton, A. A. C., 305; Thompson, S. P. (Chairman), 309; Vyvyan, Capt., 296.					
Telegraphy, Wireless, at the Paris Exhibition (<i>J. Gavey</i>)	...	...	...	...	30
—, —, Wilkins's	...	...	...	...	27
Telephone Exchanges and their Working (<i>Dane Sinclair</i>)	...	...	...	...	25
<i>Discussion</i> :—Addenbrooke, G. L., 364; Binswanger, G., 358; Hawes, F. B. O., 367; Kingsbury, J. E., 350; Mance, Sir Henry (Chairman), 378; Preece, Sir W. H., 360; Sinclair, Dane (in reply), 372; Somerville, G. J., 370.					
Telephone Receiver, Direct-Current Arc as (<i>W. Duddell</i>)	...	...	...	...	30
— Service Committee, Report of	...	...	...	...	28
Telephone Switch-Board, Origin and Development of the (<i>J. E. Kingsbury</i>)	...	...	...	...	24
<i>Discussion</i> :—Addenbrooke, G. L., 66; Aitken, W., 71; Calder, A., 66; Clay, C. B., 70; Crompton, R. E. (the President), 75; Gill, F., 78; Hawes, F. B. O., 64; Holmes, P., 74; Kingsbury, J. E. (in reply), 80; Langdon, W., 61; Latimer, F. D., 76; Lorrain, J. G., 72; Phillips, C. J., 61.					
Telephone Transmitter, Direct-Current Arc as (<i>W. Duddell</i>)	...	...	...	...	30
Telephone Trunk Line System in Great Britain, The (<i>J. Gavey</i>)	...	...	...	...	25
<i>Discussion</i> :—Ayrton, W. E., 668; Gavey, J. (in reply), 657, 674; Kingsbury, J. E., 657; Mance, Sir Henry (the Chairman), 657, 680; O'Gorman, M. J. P., 660; Phillips, C. J., 660; Preece, Sir W. H., 672; Sinclair, Dane, 654, 667; Swinton, Campbell, 661; Webber, Gen., 662.					

	VOL.	PAGE
Telephones and Telegraphs at the Paris Exhibition (<i>J. Gavey</i>). [See <i>Telegraphs</i>]	30	73
——— for Use on Ships (<i>C. E. Grove</i>)	29	557
Temperature-Rise in Field Coils of Dynamos (<i>E. Brown</i>)	30	1159
Tester, Magnetic, for Measuring Hysteresis in Sheet Iron (<i>J. A. Ewing</i>)	24	398
<i>Discussion</i> :—Ayrton, W. E., 413; Bailey, F. G., 420; Esson, W. B., 420; Ewing (in reply), 424; Ferranti, De, 419; Fleming, J. A., 411; Forbes, George, 415; Foster, G. Carey, 412; Salomons, Sir David (the Chairman), 410; Siemens, A., 418; Steele, L. J., 423; Trotter, A. P., 422.		
Testing and Working of Alternators (<i>W. M. Mordey</i>). [See <i>Alternators</i>]	22	116
——— the Magnetic Qualities of Iron (<i>Gisbert Kapp</i>)	23	199
Tesla, Nikola [<i>Paper</i>], Experiments with Alternate Currents of High Potential and High Frequency	21	51
———, ———, Award of Institution Premium to (1892)	21	718
Thomas, Eustace— [<i>Discussion</i>] Alternating-Current Induction Motor	29	848
,, Calculation of Distributing Systems of Electric Traction	29	731
,, Electric Traction by Surface Contacts	28	263
,, Rotatory Converters	27	716
Thompson, Silvanus P.— [<i>Papers</i>] Inaugural Address as President (1899)	29	14
,, Rotatory Converters	27	651, 732
[<i>Discussion</i>] Apparatus for 200-Volt Circuits	27	183
,, Applications of Electricity in Medical and Surgical Practice	29	366
,, Capacity Measurements of Long Submarine Cables	28	501, 507
,, Distant Electric Power-Transmission	29	676
,, Dynamos	26	574
,, Electric Lighting of the City of London	23	190
,, ——— Intercommunication in Railway Trains	27	783
,, ——— Traction and Tramways	23	729
,, ——— by Surface Contacts	28	267
,, ——— Tramways	27	474
,, ——— Wiring	25	136
,, Electrical Power Bills of 1900	30	504
,, ——— Time Service	29	146, 153
,, ——— Transmission of Power from Niagara	22	560
,, Electrolytic Centrifugal Process for Production of Copper Tubes	29	281, 284
,, Experiments on Alternate-Current Arcs by Aid of Oscillographs	28	459
,, Frictionless Motor Meter	29	790
,, Hissing of the Electric Arc	28	431, 433
,, Light of the Electric Arc	21	402
,, Magnetic Balance for Tests of Permeability	27	534
,, Parallel Working	23	288
,, Polyphase Sub-station Machinery	30	758
,, Prevention and Control of Sparking, &c.	22	394
,, ——— of Interruptions to Electricity Supply	27	517

Thompson, Silvanus P. (*continued*)—

[<i>Discussion</i>] Problems of Commercial Electrolysis	21
„ Relative Advantages of Alternating- and Continuous-Current Electricity Supply	30
„ Relative Size, Weight, and Price of Dynamo-Electric-Machines	26
„ Reversible Regenerative Armatures and Short Air-Space Dynamos	24
„ Rotatory Converters [<i>Reply</i>]	27
„ Telegraphs and Telephones at the Paris Exhibition	30
„ Testing and Working Alternators	22 139,
„ ——— the Magnetic Qualities of Iron	23
„ Utilisation of Schaffhausen Water-Power	29
„ ——— of Water-Power	25
„ Wehnelt Interrupter	28
„ Wireless Telegraphy	28
„ Wiring Rules	28 229,
——, ———, In Reference to the Death of Prof. G. F. Fitzgerald	30
Thomson, Captain A. S. [<i>Discussion</i>], Repairs to the South American Company's Cable	26
——, H. J.; Award of Salomons Scholarship to (1899)	28
Three-phase Alternating Currents, Electric Traction (<i>E. K. Scott</i>)	28
Three-phase and Direct-Current Distribution, Relative Advantages of for Small Installations (<i>H. A. Earle</i>). [<i>See Distribution</i>]	30
Threlfall, R. [<i>Discussion</i>], Capacity in Alternate-Current Working	30
Thun-Burgdorf Electric Railway, Visit to	29
Tidd, E. G. [<i>Discussion</i>], Method of Charging for Public Electricity Supply	29
Time Service, Electrical (<i>F. Hope-Jones</i>)	29 119,
<i>Discussion</i> :—Acland, Capt. F. E. D., 148; Ayrton, W. E., 147; Bateman, A. H., 145; Ellis, W., 149; Frodsham, G. W., 147; Harrison, H. T., 143; Hope-Jones, F. (in reply), 151, 287; Lund, A. J., 141; Puttkammer, C., 286; Raworth, J. S., 144; Stockall, W. H., 145; Thompson, S. P. (President), 146, 153; Worthington, E., 146.	
Tomlinson, H. J., Award of Salomons Scholarship to (1898)	28
Tools, Machine, Application of Electric Power to (<i>C. B. Nixon</i>)	30
Tools, Machine, Electrically-Driven; and their Advantages for Use in Engineering Workshops (<i>G. Ralph</i>). (Newcastle Local Section)	30
<i>Discussion</i> :—Bigland, H. H., 563; Broadbent, F., 561; Dobbie, R. S., 562; Heaviside, A. W., 564; Moir, A., 560; Ralph, G. (in reply), 565; Rossignol, A. le, 564; Turnbull, C., 561.	
Traction, Accumulator, on Rails and Ordinary Roads (<i>L. Epstein</i>)	26
<i>Discussion</i> :—Ayrton, W. E., 685, 689; Bell, J. R., 760; Brown, J., 714; Carter, E. Tremlett, 686, 710; Crompton, R. E., 677; Dickinson, A., 761; Epstein, L. (in reply), 767; Fitzgerald, D. G., 743; Hall, Cuthbert, 706; Harrison, H. T., 764; Manby, E., 676, 687; Mance, Sir Henry (President), 715, 765; Manville, E., 682, 685, 686; Mavor, S., 685; Parker, T., 699; Raworth, J. S., 708; Smith, E. Wythe, 757; <i>Smith, Holroyd</i> , 710; Smith, R. H., 751; Swan, J. W., 708; <i>Wallis-Jones, R. J.</i> , 748; Warden-Stevens, F. J., 748; <i>Webber, General</i> , 678; Wilson, Ernest, 703.	

	VOL.	PAGE
Traction, Electric, by Surface Contacts (<i>Miles Walker</i>) ...	28	240
<i>Discussion</i> :—Ayrton, W. E., 260; Carter, E. T., 265; Carus-Wilson, C. A., 258; Cozens-Hardy, E. H., 264; Lawson, A. J., 262; Sharp, S., 259; Sillar, G. C., 265; Smith, R. H., 265; Thomas, E., 263; Thompson, S. P. (Chairman), 267; Walker, M. (in reply), 267; Wilson, E., 266.		
Traction by Three-phase Alternating Currents (<i>E. K. Scott</i>) ...	28	108
Traction, Electric, Calculation of Distributing Systems of, under British Conditions (<i>H. M. Sayers</i>) ...	29	692
<i>Discussion</i> :—Jamieson, A., 729; Jenkin, Bernard M., 733; McMahon, P. V., 735; Quin, R. C., 735; Sayers, H. M. (in reply), 739; Scott, E. K., 733; Swinburne, J., 734; Taylor, A. M., 729; Thomas, E., 731; Trotter, A. P., 738; Webber, General C. E., 736; Wood, R., 737.		
Traction Appliances, Electric, Some Recent Developments in (<i>A. K. Baylor</i>) ...	26	344
<i>Discussion</i> :—Baylor, A. K. (in reply), 426; Brown, C. E. L., 424; Dawson, Philip, 386; Edmunds, Henry, 422; Gadsby, C. H., 405; Geipel, W., 417; Grove, C. E., 405; Mance, Sir Henry (President), 431; Parshall, H. F., 410; Preece, Sir W. H., 401, 416; Raworth, J. S., 387, 421; Rice, E. W., jun., 389; Scott, E. K., 419; Sellon, S., 397; Smith, Holroyd, 399; Snell, Albion T., 421; Wallis-Jones, R., 395.		
Traction, Electric, with Special Reference to the Installation of Elevated Conductors (<i>R. W. Blackwell and Philip Dawson</i>) ...	23	649
Traction, Electric, Tramways in the United States and Canada, Notes on (<i>H. D. Wilkinson</i>) ...	23	562, 630
Traction, Electrical Steep-Grade, in Europe (<i>C. S. du Riche Preller</i>) ...	23	684
<i>Discussion</i> on the above three Papers:—Childs, Arthur E., 740; Dallas, J. D., 739; Dawson, Philip (in reply), 762; Dickinson, Alfred, 742; Ferranti, S. Z. de, 735; Geipel, William, 748; Jenkin, B. M., 749; Keith, N. S., 696; Lea, F. B., 725; Lundberg, G. C., 744; McGraw, J. H., 727; Parshall, H. F., 699; Preller, C. S. du Riche (in reply), 770; Robinson, Foley, 724; Robinson, Mark, 697; Sankey, Capt., 701; Sharp, A., 737; Smith, Holroyd, 705; Thompson, S. P., 729; Wain, W. J. Carruthers, 732; Webber, General C. E., 728; Wilkinson, H. D. (in reply), 754.		
Tractive Resistance in Tunnels (<i>P. V. McMahon</i>). [See <i>Locomotives, Electric</i>] ...	28	508
Training of Electrical Engineers (<i>J. T. Nicolson</i>). [Manchester Local Section] ...	30	773
<i>Discussion</i> :—Gee, W. H., 790; Guy, A. F., 788; Hopkinson, E., 790; Joyce, S., 792; Lees, C. H., 789; Nicolson, J. T. (in reply), 792; Rhodes, W. G., 786; Wilson, W., 786; Wordingham, C. H., 787.		
Tramway Rails, Electric Welding of (<i>R. J. Wallis-Jones</i>) ...	27	642
Tramways, Electric, Disturbance of Submarine Cable Working by (<i>A. P. Trotter</i>). [See <i>Submarine</i>] ...	28	501
—, Generation of Electrical Energy for (<i>J. S. Raworth</i>) ...	28	432
Tramways, Electric, in the United States and Canada (<i>H. D. Wilkinson</i>) ...	23	562, 630

	VOL.	PAGE
Tramways, Electric, Earth Returns for (<i>H. F. Parshall</i>) ...	27	440
Tramways, Electric, Note on (<i>Major P. Cardew</i>), and ...	27	456, 460
Tramways, Electric, Note on Return Feeders for (<i>A. P. Trotter</i>) ...	27	457
<i>Discussion on above three Papers:—</i> Ayrton, W. E., 471; Cardew, Major P. (in reply), 484; Gadsby, C. H., 464; Heaviside, A. W., 467; Lawson, A. J., 468; Murphy, W., 467; Parshall, H. F. (in reply), 482; Perry, J., 468; Swan, J. W. (President), 480; Thompson, S. P., 474; Wood, W., 480; Wordingham, C. H., 478.		
Tramways, Electric, Load Diagrams, and the Cost of Electric Traction (<i>A. Reckenzaun</i>) ...	21	293
<i>Discussion:—</i> Baker, Graff, 312; Blackwell, R. W., 327; Condict, G. H., 330; Crompton, R. E., 336; Dolby, E. R., 318; Jarman, A. J., 332; McMahon, P. V., 309; Manville, E., 319; Reckenzaun, A. (in reply), 340; Russell, Stuart A., 316; Sellon, Stephen, 334; Snell, Albion T., 322; Swinburne, James, 339; Trotter, A. P., 337; Volk, Magnus, 311; Willans, P. W., 337.		
Tramways, Electric, Use of Storage Batteries in connection with (<i>G. A. Grindle</i>) ...	30	1098
Tramways, Generation of Electrical Energy for (<i>J. S. Raworth</i>)	26	432
<i>Discussion:—</i> Carter, E. Tremlett, 471; Clirehugh, S. V., 487; Crompton, R. E., 481; Gadsby, C. H., 484; Garcke, E., 485; Geipel, W., 470, 485; Grove, C. E., 483; Lawson, A. J., 489; McMahon, P. V., 482; Mance, Sir Henry (the President), 500; Morse, Sydney, 488; Perry, J., 481; Raworth, J. S. (in reply), 493; Robinson, Mark, 491; Warden-Stevens, F. J., 489; Wordingham, C. H., 486.		
“Transformer (Direct-to-Alternating Current-)” of very High Frequency, Description of New Form of (<i>Sir David Salomons</i>) ...	21	709
Transformers, Alternate-Current, Experimental Researches on (<i>J. A. Fleming</i>) ...	21	594
<i>Discussion:—</i> Albright, J. F., 747; Crompton, R. E., 738; Evershed, Sydney, 705, 708; Forbes, George, 698; Kapp, Gisbert, 702; Mordey, W. M., 727, 740; Raworth, J. S., 746; Sayers, W. B., 707; Sumpner, W. E., 740; Swinburne, James, 694.		
——— (<i>continued Discussion</i>) ...	22	2
Ayrton, W. E., 78; Fitzgerald, G. F., 2; Fleming, J. A. (in reply), 84; Haycraft, H. C., 19; Kennedy, A. B. W., 27; Perry, John, 13; Preece, Sir W. H. (the President), 114; Sayers, W. B., 83; Sparks, C. P., 22; Weekes, R. W., 11; Wright, Arthur, 24.		
Transformers, Iron Losses of, Experimental Tests on the Influence of the Shape of the Applied Potential Difference Wave on the (<i>Stanley Beeton, C. Percy Taylor, and James Mark Barr</i>) ...	25	474
<i>Discussion:—</i> Ayrton, W. E. (the Chairman), 510; Barr, J. M., (in reply), 514; Carter, Tremlett, 509; Evershed, S., 508; Fleming, J. A., 502; Rhodes, W. G., 506; Taylor, C. P. (in reply), 516.		

	VOL.	PAGE
Transmission, Electrical, of Energy at Genoa (<i>Louis Goichot</i>) ...	22	445
———, Electric, of Power, Distant (<i>G. Forbes</i>). [See <i>Power</i>] ...	29	629
———, Electrical, of Power from Niagara Falls (<i>G. Forbes</i>). [See <i>Power</i>] ...	22	484
———, ———, of Power in Coal Mines (<i>H. W. Ravenshaw</i>). [See <i>Mines</i>] ...	30	806
Transparent Conducting Screens for Electric and other Apparatus (<i>W. E. Ayrton and T. Mather</i>) ...	23	376
<i>Discussion</i> :—Ayrton, W. E. (in reply), 388; Crompton, R. E., 387; Mordey, W. M., 386.		
Treuenfeld, R. Von [<i>Discussion</i>], Railway Telegraphs ...	25	420
Trolley-Lines (<i>Blackwell and Dawson</i>). [See <i>Traction</i>] ...	23	649
Trotter, A. P. —		
[<i>Papers</i>] Disturbance of Submarine Cable Working by Electric Tramways ...	26	501
,, Notes on the Light of the Electric Arc [See <i>Arc</i>] ...	21	360, 407
,, Return Feeders for Electric Tramways ...	27	457
[<i>Discussion</i>] Alternate-Current Measurement, &c. ...	30	914
,, Applications of Electricity in Medical and Surgical Practice ...	29	374
,, Calculation of Distributing Systems of Electric Traction ...	29	738
,, Hissing of the Electric Arc ...	28	444
,, Electric Light for Railway Purposes ...	24	335
,, Light of the Electric Arc [<i>Reply</i>] ...	21	407
,, Load Diagrams of Electric Tramways, &c. ...	21	337
,, Magnetic Tester for Measuring Hysteresis in Sheet Iron ...	24	422
,, New Form of Portable Photometer ...	22	208
,, Oil as an Insulator ...	21	282
,, Prevention and Control of Sparking, &c. ...	22	421
,, Problems of Commercial Electrolysis ...	21	571
,, Rapid Variations in Current through Direct-Current Arc ...	30	272
,, Report of Swiss Visit ...	29	253
,, Storage Batteries controlled by Reversible Boosters ...	30	1084
,, Supersession of Steam- by Electric-Locomotive ...	30	179
,, Use of Electricity in Coal Mines ...	30	859
,, Watt-Hour Meter ...	30	963
———, ———, Award of Premium to (1897) ...	26	719
Tubes, Copper, Electrolytic Centrifugal Process for the Production of (<i>S. Cowper-Coles</i>). [See <i>Electrolytic</i>] ...	29	258
Tunnels, Tractive Resistance in (<i>P. V. McMahon</i>). [See <i>Locomotive, Electric</i>] ...	28	508
Turnbull, C. —		
[<i>Discussion</i>] Electrically-driven Machine Tools ...	30	561
,, Supersession of Steam- by Electric-Locomotive ...	30	194
,, Wiring Rules ...	30	1150
Twinberrow, J. D. [<i>Discussion</i>], Supersession of Steam- by Electric-Locomotive ...	30	190
Two-phase Rotary Converter and a Note on the Regulation of Rotary Converters (<i>Ernest Wilson</i>) ...	23	403

	VOL.	PAGE
Tyler, E. H. [<i>Discussion</i>], Supersession of Steam- by Electric-Locomotive	30	180
Tyndall, Dr. John, Announcement of the Death of, and Vote of Condolence with Mrs. Tyndall	22	570
Type-writing Telegraph, Stelje's (<i>W. T. Goolden</i>)	30	103

U.

Uehlinger, A. [<i>Discussion</i>], Utilisation of Schaffhausen Water-Power	29	189
Underground Wires in India, New Danger to (<i>P. V. Luke</i>)	22	146
Uniformity Committee, Interim Report on the Subject of Standard Frequency	28	272
United States, Electric Tramways in (<i>H. D. Wilkinson</i>). [<i>See Traction</i>]	23	562, 630
United States and Chicago, Notes of a Trip to, 1893. (<i>Sir W. H. Preece</i>)	23	40
Remarks on the above:—Dr. N. S. Keith	23	86
Unwin, P. J. [<i>Discussion</i>], Electric Wiring	25	171
—, W. C. [<i>Discussion</i>], Cost of Electrical Energy	23	515
Utilisation of the Schaffhausen Water-Power (<i>Alfred Amsler</i>) [<i>Discussion</i> :—Addenbrooke, G. L., 191; Kapp, G., 184; Perry, J., 184; Prášil, F., 185; Scott, E. K., 184; Uehlinger, A., 189.]	29	175

V.

Varley, Frederick H.—

[<i>Discussion</i>] Oil as an Insulator	21	275
„ Supersession of Steam- by Electric-Locomotive	30	184
Variations, Rapid, in Current through Direct-Current Arc (<i>W. Duddell</i>). [<i>See Arc</i>]	30	232
Vaudrey, J. C. [<i>Discussion</i>], Polyphase Equipment of Factories	30	1014
—, —, in Reference to Creation of Birmingham Local Section	30	795
Vautin, Claude [<i>Discussion</i>], Electrolysis of Gold	24	260
Vigor, J. H., Award of Students' Premium to (1901)	30	1215
Virág and Pollak's Photo-autographic Telegraph at Paris Exhibition (<i>J. Gavey</i>)	30	79
Volk, Magnus [<i>Discussion</i>], Load Diagrams of Electric Tramways	21	311
Von Stephan, Dr., Election of, as Honorary Member	26	208
—, —, Announcement of the Death of	26	344
Vignoles, E. B. [<i>Discussion</i>], Mode of Electing Associates	21	725
Voltmeter, Astatic Station (<i>W. E. Ayrton</i> and <i>T. Mather</i>)	23	380
Voltmeter (Three-) Method of Measuring Alternate-Current Power (<i>J. A. Fleming</i>)... ..	21	602

	VOL.	PAGE
Voltmeters, Method of Compensating, for Voltage-drop in Long Feeders (<i>M. B. Field</i>). [Glasgow Local Section.]	30	567
Discussion:— <i>Field</i> , M. B. (in reply) 594; <i>Jamieson</i> , A., 591; <i>Maclean</i> , M., 591; <i>McWhirter</i> , W., 593.		
Volunteers, Electrical Engineer (R.E.), Accepted for Active Service in South Africa	29	198
—, —, —, —, —, Address to Active-Service Contingent, by Prof. J. Perry, President ...	30	302
—, —, —, —, —, in South Africa (<i>Lieut.-Col. R. E. Crompton</i>)	30	284
—, —, —, —, —, List of Active Service (South African) Detachment	30	300
—, —, —, —, —, Reception of, on Return from Active Service	30	123, 302
—, —, —, —, —, Resolutions of Congratulation to Active-Service Contingent...	30	217, 303, 345
—, —, —, —, —, Suggested Formation of Corps	25	4
Vyvyan, Captain [<i>Discussion</i>], Wireless Telegraphy	28	296

W.

Wade, E. J. [<i>Paper</i>], Storage Battery Problems. [See <i>Battery</i>] ...	29	460
—, —, —, —, —, Reply to Discussion on his Paper	29	524
Wain, W. J. Carruthers [<i>Discussion</i>], Electric Traction and Tramways	23	732
Walker, E. O. [<i>Paper</i>], Earth Currents in India. [See <i>Earth</i>] ...	22	214, 223
—, —, —, —, —, Notes on a Selenium Cell	22	143
—, —, —, —, —, [<i>Discussion</i>], Earth Currents in India [<i>Reply</i>] ...	22	223
Walker, M. [<i>Paper</i>], Electric Traction by Surface Contacts	28	240
—, —, —, —, —, Reply to Discussion on this Paper	28	267
—, —, —, —, —, and <i>Lamb, C. G.</i> [<i>Paper</i>], Instrument for Measuring the Permeability of Iron and Steel	30	930
Walker, P. B. , Obituary Notice of... ..	30	1249
Walker, S. F. , Electrical Miner's Safety Lamps	30	815
[<i>Discussion</i>] Applications of Electricity in Medical and Surgical Practice	29	374
„ Electrical Equipment of Ships of War	29	616
„ ——— Miner's Safety Lamps [<i>Reply</i>]	30	884
„ ——— Transmission of Power from Niagara	22	568
„ Prevention and Control of Sparking, &c.	22	404
„ Storage Battery Problems... ..	29	520
„ Storage Batteries controlled by Reversible Boosters	30	1086
Wallis-Jones, R. J. [<i>Paper</i>], Electric Welding of Tramway Rails ...	27	642
[<i>Discussion</i>] Accumulator Traction	26	748
„ Electric Traction Appliances	26	395
„ ——— Wiring	25	116
„ Wiring Rules	28	187

	VOL.	PAGE
Walton, A. H. [<i>Discussion</i>], Supersession of Steam- by Electric-Locomotive	30	170
War, Ships of, Electrical Equipment of (<i>C. E. Grove</i>). [<i>See Ships</i>]...	29	530
Ward-Leonard, H. [<i>Discussion</i>], Relative Advantages of Alternating- and Continuous-Current Electricity Supply	30	25
Warden-Stevens, F. J.—		
[<i>Discussion</i>] Accumulator Traction	26	746
" Generation of Electrical Energy for Tramways...	26	489
Warren, T. Bruce [<i>Discussion</i>], Repairs to the South American Company's Cable	26	296
Water-Power, Schaffhausen, Utilisation of (<i>A. Amster</i>)	29	175
Water-Power, Utilisation of, especially with a Small Fall, with some Examples of Plants for the Generation of Electrical Energy (<i>Alph. Steiger</i>)	25	521
<i>Discussion</i> :—Carter, Tremlett, 542; Esson, W. B., 550; Geipel, W., 553; Mowat, M., 549; Shoolbred, J. N., 547; Siemens, Alexander, 546; Steiger, A. (in reply), 555; Thompson, S. P., 562; Webber, General C. E., 561.		
Watkinson, W. H. [<i>Discussion</i>], Electric Driving	29	808
Watlington, V., Award of Students' Premium to (1896)	25	684
Watt-Hour Meter (<i>F. Holden</i>). [<i>See Meter</i>]	30	944
Wattmeter, Alternate-Current (<i>W. M. Mordey</i>)	30	384
—— (Dynamometer-), Method of Measuring Alternate - Current Power (<i>J. A. Fleming</i>)	21	623
Wave of the Applied E.M.F., Shape of, Variation of Choking Coil and Condenser Currents with (<i>A. Russell</i>)	29	154
Webb, E. March [<i>Discussion</i>], Repairs to the South American Company's Cable	26	270
——, F. H. [<i>See Secretary</i> .]		
——, ———, Testimonial and Address to	27	239
——, F. W. [<i>Discussion</i>], Electric Light for Railway Purposes ...	24	353
Webber, Major-Gen. [<i>Paper</i>], Electro-Chemical Treatment of Ores containing the Precious Metals	27	38, 92
——, ———, Notice of Exhibits illustrating Applications of Electricity in Paris Exhibition	30	23
——, ———, Some Notes on the Electric Lighting of the City of London	23	120, 194
[<i>Discussion</i>] Accumulator Traction	26	678
" Application of Electricity in Medical and Surgical Practice	29	368
" Calculation of Distributing Systems of Electric Traction	29	736
" Cost of Electrical Energy	23	468, 27 379
" Electric Lighting of the City of London [<i>Reply</i>]...	23	194
" —— Traction and Tramways	23	728
" —— Wiring	25	41
" Electrical Power Bills of 1900	30	525
" Electrical Transmission of Power from Niagara ...	22	599
" Electrically Interlocking Railway Signals...	26	140
" Electro-Chemical Treatment of Ores [<i>Reply</i>] ...	27	92
" Electrolytic Process for the Manufacture of Parabolic Reflectors	27	110
" Magnetic Space Telegraphy... ..	27	903

	VOL.	PAGE
Webber, Major-Gen. (<i>continued</i>)—		
[<i>Discussion</i>] Parallel Working	23	293
„ Standardisation of Electrical Engineering Plant...	29	313, 315
„ Telephone Trunk Line System in Great Britain ...	25	662
„ Utilisation of Water Power	25	561
„ Wiring Rules	28	178, 237
—, —, Reference to the Death of Prof. G. F. Fitzgerald ...	30	511
Wedmore, E. Basil [<i>Paper</i>], Simple Method of Analysing Periodic Curves	25	224
—, —, Award of Students' Premium to (1896)	25	684
Weekes, R. W.—		
[<i>Discussion</i>] Alternate-Current Transformers	22	11
„ Dynamos	26	607
„ Electric Light for Railway Purposes	24	331
„ Electrical Transmission of Power from Niagara ...	22	597
„ Electrically Interlocking Railway Signals... ..	26	144
„ Light of the Electric Arc	21	397
„ Parallel Working	23	284
„ Prevention of Interruptions to Electricity Supply	27	516
„ Testing and Working Alternators	22	186
West, J. H., Award of Students' Premium to (1901)	30	1215
Wehnelt's Electrolytic-Contact Breaker (<i>A. A. Campbell Swinton</i>)	28	317
<i>Discussion</i> :—E. T. Carter, 320; A. A. C. Swinton (in reply), 320; S. P. Thompson (Chairman), 320.		
Weight, Size, and Price of Dynamo-Electric Machines, Relative (<i>Ernest Wilson</i>). [<i>See Dynamo</i>]	26	160
Welding, Electric, of Tramway Rails (<i>R. J. Wallis-Jones</i>). [<i>See Tramways</i>]	27	642
Wells, Lt.-Col. H. L., Obituary Notice of	28	682
Whalley, A.—		
[<i>Discussion</i>] Capacity in Alternate-Current Working	30	454
„ Direct-Current <i>versus</i> Three-phase Distribution ...	30	323
„ Specification of Insulated Conductors, &c.	21	229
Wharton, Admiral, Sir W. J. L. [<i>Discussion</i>], Repairs to the South American Company's Cable	26	255
Whitehead, C. S., and W. E. Ayrtton [<i>Paper</i>], The Best Resistance for the Receiving Instrument on a Leaky Telegraph Line	23	327
—, —, [<i>Discussion</i>], Magnetic Space Telegraphy	27	904
Wightman, R., and C. C. Hawkins [<i>Paper</i>], The Air-Gap Induction in Continuous-Current Dynamos	29	436
—, —, Award of Premium to	29	863
Wilde, Dr. Henry, F.R.S., Election of, as an Honorary Member ...	27	525
[<i>Discussion</i>] Electrical Equipment of Ships of War	29	614
„ Electrolytic Centrifugal Process for Production of Copper Tubes	29	279
—, —, Letter to the Council from	29	3
— Benevolent Fund	30	1219
— Benevolent Fund, Declaration of Trust	29	865
Wilkins's Wireless Telegraphy	27	958
Wilkinson, H. D. [<i>Paper</i>], Notes on Electric Tramways in the United States and Canada	23	562, 754

	VOL.	PAGE
Wilkinson, H. D., Supplementary Note on the above Paper ...	23	630
[Discussion] Electric Tramways in America [Reply] ...	23	754
,, Polyphase Equipment of Factories ...	30	1013
,, Repairs to the South American Company's Cable ...	26	299
,, Use of Electricity in Coal Mines ...	30	876
,, Award of Institution Premium to (1894) ...	23	715
Willans, P. W. [Discussion], Load Diagrams of Electric Tramways, &c. ...	21	337
,, Announcement of the Death of... ..	21	473
,, Premium, Foundation of	23	716
,, Award of, to Mr. Mark Robinson (1897) ...	26	720
Williams, A. [Discussion], Electrolytic Centrifugal Process for Production of Copper Tubes ...	29	282
Wilmshurst, T. P. [Discussion], Cost of Electrical Energy ...	23	537
Wilson, Ernest—		
[Papers] A Rotary Converter	28	367
,, A Two-Phase Rotary Converter, and the Regulation of Rotary Converters	29	409
,, Induction Motor	28	321, 361
,, The Relative Size, Weight, and Price of Dynamo-electric Machines	26	160, 174
[Discussion] Accumulator Traction	26	703
,, Alternating-Current Induction Motor	29	842
,, Capacity in Alternate-Current Working	30	437
,, Distant Electric Power Transmission	29	668
,, Electric Locomotives	28	624
,, ——— Traction by Surface Contacts	28	266
,, Experiments on Alternate-Current Arcs by Aid of Oscillographs	28	469
,, Induction Motor [Reply]	28	361
,, Polyphase Sub-station Machinery	30	765
,, Relative Size, Weight, and Price of Dynamos [Reply]	26	174
,, Rotatory Converters	27	725
,, Storage Batteries controlled by Reversible Boosters	30	1080
,, and J. Hopkinson [Paper], Propagation of Magnetisation in Iron	24	194
,, L. [Paper], Effect of Governors on Parallel Running of Alternators	28	389
,, ———, Award of Students' Premium to (1899)	28	639
,, W. [Discussion], Training of Electrical Engineers	30	773
Wilson-Barker, Captain [Discussion], Repairs to South American Company's Cable	26	273
Wimshurst, J. [Discussion], Applications of Electricity in Medical and Surgical Practice	29	367
,, ———, Explanation of the Experimental Apparatus used to illustrate Prof. Hughes's Paper on Oil as an Insulator	21	256
Winter, C. E. [Discussion], Disturbance of Submarine Cable Working by Electric Tramways	26	530
,, G. K., Obituary Notice of... ..	28	688
,, ———, and George B. Winter [Paper], Graphic Method of Studying the Behaviour of the Exposed Ends of Broken Telegraph Cables, and of Means of Eliminating the Effect of Earth Currents, and of Polarisation at the Fault ...	22	348

Winter, W. H.—

[Discussion] Electric Intercommunication in Railway Trains...	27	781
„ Electrically Interlocking Railway Signals...	26	135, 142
Wireless Telegraphy (<i>G. Marconi</i>). [See <i>Telegraphy</i>]...	28	273
— at the Paris Exhibition (<i>J. Gavey</i>) ...	30	87
—, Wilkins's ...	27	958
Wires, Underground, in India, A New Danger to (<i>P. V. Luke</i>) ...	22	146
Wiring, Concentric (<i>Sam. Mavor</i>) ...	24	602
Wiring Question, The Electric (<i>F. Bathurst</i>) ...	24	582

Discussion:—Addenbrooke, G. L., 119; Andrews, J. D. F., 112; Antill, B. H., 46; Ayrton, W. E., 124; Bathurst, F. (in reply), 172; Binswanger, G., 140; Boot, H. L. P., 142; Chamen, W. A., 168; Corlett, G. S., 51; Crompton, R. E., 155; Donovan, H. C., 45; Dykes, A. H., 152; Geipel, W., 30, 52; Handcock, H. W., 33; Human, H., 146; Langdon, W. E., 43; McLean, J. H., 39; Mavor, S. (in reply), 187; Rawlings, W. R., 144; Russell, C. N., 122; Salomons, Sir David (Chairman), 53; Sheppard, J. 157; Shoolbred, J. N., 149; Snell, Albion T., 164; Swinton, A. A. Campbell, 48; Tarrant, K. J., 169; Tasker, W. Howard, 161; Taylor, F. H., 159; Thompson, S. P., 136; Unwin, P. I., 171; Wallis-Jones, R., 116; Webber, General C. E., 41.

Wiring of Premises for Connection to Public Supply Mains, Rules for the Regulation of (<i>J. Pigg</i>) ...	28	122
— Rules, Institution (<i>R. E. Crompton</i>) ...	28	173
—, Regulation of (<i>C. H. Wordingham</i>) ...	28	166
—, Resolution on Subject of ...	28	236
Wiring Rules, Notes on (<i>F. Broadbent</i>) [Newcastle Local Section]	30	1130
<i>Discussion</i> :—Broadbent, F. (in reply), 1156; Falconar, O. L., 1154; Gott, A. E., 1151; Gowdy, S. H., 1155; Moir, A., 1150; Sleight, J. P., 1156; Turnbull, C., 1150.		
Wolff, C. E. [Discussion], Electric Intercommunication in Railway Trains	27	782
Wood, A. P. [Discussion] Direct-Current versus Three-phase Distribution	30	323
—, L. [Discussion], Supersession of Steam- by Electric-Locomotive	30	196
Wood, Reginald [Paper], Feeder Machines ...	27	637
[Discussion] Calculation of Distributing Systems of Electric Traction ...	29	737
„ Frictionless Motor Meter ...	29	784
„ Storage Batteries controlled by Reversible Boosters	30	1089
„ Supersession of Steam- by Electric-Locomotive ...	30	187
—, W. [Discussion], Electric Tramways ...	27	480
Woodhouse, C. H. C., Award of Salomons Scholarship to (1892) ...	21	718
Woods, W., Award of the Institution Premium to (1891) ...	21	3
Wordingham, C. H. [Paper], Regulation of Wiring Rules ...	28	166
[Discussion] Apparatus for 200-Volt Circuits ...	27	164
„ Cost of Electrical Energy ...	27	387
„ Electric Tramways ...	27	478
„ Generation of Electrical Energy for Tramways ...	26	486
„ Storage Batteries controlled by Reversible Boosters	30	1078
„ Training of Electrical Engineers ...	30	773
„ Wiring Rules ...	28	176, 231
Workshops, Engineering, Advantages of Electrically-driven Machine-Tools in (<i>G. Ralph</i>). [See <i>Tools</i>] ...	30	545

	VOL.	1
Worthington, E. [<i>Discussion</i>], Electrical Time-Service...	...	29
Wright, Arthur—		
[<i>Discussion</i>] Alternate-Current Transformers	...	22
,, Registration of Small Currents	...	27
,, Single-Acting High-Speed Engine	...	24
,, Wiring Rules	...	28
Wyld, W. [<i>Paper</i>], Polyphase Equipment of Factories. [Birmingham Local Section]	...	30
[<i>Discussion</i>] Direct-Current <i>versus</i> Three-phase Distribution	...	30
,, Polyphase Equipment of Factories [<i>Reply</i>]	...	30
———, Award of Premium to (1901)	...	30
Wyles, F.—		
[<i>Discussion</i>] Electrically Interlocking Railway Signals	...	26
,, Railway Telegraphs	...	25
———, ———, Obituary Notice of	...	29

Y.

Yorke, R. F. [<i>Discussion</i>], Supersession of Steam- by Electric-Locomotive	...	30
Young, J. Elton—		
[<i>Papers</i>] Absolute Values of Capacity Measurements	...	29
,, Capacity Measurements of Long Submarine Cables	...	28
———, ———, Award of Premium to (1899)	...	28

Z.

Zero-Torque Electricity Meter (<i>Joseph Edmondson</i>)	...	24
Zürich Central Station, Visit to	...	29
——— City and District Tramways, Visit to	...	29 215, 217,
———, Report of Meeting in	...	29

ABSTRACTS.

A

	VOL.	PAGE
Abraham, A., Compensation of Directive Forces, and Sensitiveness of Movable-Coil Galvanometer	25	592
——, H., New Determination of "v"	21	750
——, The Output of an Influence Machine	21	750
——, and J. Lemoine, Measurement of very High Potential Differences	25	329
——-Carpentier Induction Oscillograph (H. Abraham)	26	451
Absolute Electrometer for Measuring Small Differences of Potential (Perot and Fabry)	26	182
—— Measurement of Capacity of Condensers by means of Alternate Currents (L. Lombardi)	26	102
—— Value of the Magnetic Elements up to January 1st, 1897 (T. H. Moureaux)	26	186
Absorption of Electric Oscillations in Wire Networks (J. Klemencic)...	23	96
—— of Electric-magnetic Waves (A. Righi)	26	785
—— of Luminous Rays and Röntgen Rays by Crystallised Mediums (G. Agafonoff)	26	458
—— of Röntgen Radiation by Gases and Vapours (E. Rutherford)...	26	460
Abt, A., Magnetic Properties of Magnetite (Loadstone)...	21	345
——, Magnetic Properties of Pyrrhotine	25	260
——, Permanent Magnetism of Nickel and Steel	21	753
Accumulator Plates, Local Action in (Kugel)	21	349
—— of the <i>Société de Construction Mécanique et Electrique du Nord</i>	23	461
—— Sub-Stations in Electric Lighting (Hermann Müller)	22	150
——, Combined Use of, and of Trolley (Désiré Korda)	26	325
——, Effects of Pressure on (Cailletet and Collardeau)	24	105
——, Electrodes of, Soldering (Strecker and Karrass)	26	105
——, Formation by Electrolysis of Porous Lead for	22	475
—— of the Germano-Swiss Company of Fribourg (C. E. Guye)	26	95
——, High-Voltage, Management of (L. Zehnder)	26	196
——, Lead, Capacity of, Influence of Rate of Discharge on (W. Peukert)	26	652
——, Multitubular Electric (D. Tommasi)	22	367
——, Manufacture of, Recent Advances in (Vogel)	26	106
——, Stationary, Electric Tramway Systems with (Schröder)	26	108
——, Use of, with Alternate-Current Supply	25	331
Acetylene, Combustion of (H. Le Chatelier)	25	250
——, Explosive Properties of (Berthelot and Vieille)...	25	730
——, Photometric Standard (J. Violle)	25	242
Actinometer, Electro-chemical (Ch. Maréchal)	24	107

Adhesion between Glass and Aluminium (Ch. Margot)	24
Agafonoff, G., Comparison of the Absorption of Luminous Rays and Röntgen Rays by Crystallised Media... ..	26
Air Pump, Rotating (F. Schulze-Berge)	23
Aix-la-Chapelle, Central Station (F. Uppenborn)	23
——, Electric Street Tramways in, and the First Extension of the Municipal Works	21
Alcock's Phase-Indicator for Synchronising	21
Alcohol, Refractive Index of Electric Waves in (H. O. G. Ellinger) ...	22
Alkali-Metals, Production of	23
Alkaline Salts, Dissolved, Minimum E.M.F. necessary to produce Electrolysis of (C. Nourrisson)	23
Allotropic Silver, The Resistance of (A. Oberbeck)	21
Alloy, Silicon-Copper (Vigouroux)	25
Alloys, Electrical and Thermal Conductivity of (Edm. van Aubel and R. Paillot)	25
——, Chromium, Manufacture of, by Electrolysis	23
——, Copper-Zinc, Specific Conductivity of (R. Haas)	23
——, Electrical Resistance of a few (Edm. Van Aubel)	24
—— for Standard Resistances (Feussner)	21
Alternating-Current Arc, Study of (G. Claude)	23
—— Circuits, Capacity in (A. Hess)	23
——, Difference of Phase produced by Polariser carrying (R. Malagoli)	26
—— Dynamos, Crookes Tube for Use with (Oudin and Barthélemy)	26
—— Electro-Magnets, Winding of (Thompson and Walker) ...	23
—— Field, Magnetisation of Iron in (Gerosa and Finzi) ...	21
—— Magnetic Fields, Heat Generated in Iron in, by Hysteresis (F. A. Weihe)	26
—— Motor capable of Regulation (Dr. Behn-Eschenburg)...	22
—— Motors, Non-Synchronous (E. Arnold)	22
——, Synchronous and Non-Synchronous (P. Boucherot)	25
—— Motor Meters, etc. (T. Bruger)	25
—— Rotary Magnetic Field (R. Malagoli)	24
—— Stations, Use of Voltmeters in (B. Szapiro)	23
——, Use of Accumulators with, at Zürich	25
—— Systems, Comparative Cost of Monophase and Poly- phase (H. Georges)	24
—— of Electric Supply, Regulation of Pressure and Reduction of Light-Load Losses in (E. Cowan and A. Still)	25
—— Working, Best Frequency for (E. Kolben)	23
——, Concentric Cable Phenomena in (L. Neustadt) ...	22
——, Instruments for Direct Measurement of Frequency of (A. Campbell)	25
Alternating Currents, Absolute Measurement of Capacity of Condensers by means of (L. Lombardi)	26
——, Determination of Electrical Resistance by means of (F. Kohlrausch)... ..	22
——, Differential Wattmeter for Use with (A. E. Kennelly) ...	22
——, Electro-chemical Method of Observing (P. Janet) ...	23

	VOL.	PAGE
Alternating Currents, High Frequency, Discharge from Points produced by (K. Wesendonck)	25	258
—, —, —, Measurements with (J. Tuma)... ..	25	607
—, —, —, Measurement of Capacity of Condensers with (J. Sahulka)	23	97
—, —, —, of Coefficient of Self-Induction by, and Dynamometer (Dr. J. Puluj)	21	46
—, —, —, of Resistance by means of, and Telephone (R. Colson)	24	228
—, —, —, Resistance of Conductors to (Mascart)	25	244
—, —, —, Polyphase, Simplified Method for Calculating (A. Blondel)	23	348
—, —, —, Variations of Temperature of a Conductor carrying (C. E. Guye)	26	450
Alternator, New, of the "Secteur des Champs Elysées" (F. Guilbert)	26	91
Alternators, Pressure and Current Curves of, and their Influence on Illuminating Power of Electric Arc (G. Rössler and W. Wedding)	23	787
—, —, Single and Multiphase, designed by V. Dolivo-Dobrowolsky...	24	379
Altona, Central Station (F. Uppeborn)	22	624
Aluminium, Adhesion to Glass (Ch. Margot)	24	584
—, —, and its Electro-Metallurgy (G. Richard)... ..	22, 633	23 456
—, —, Electro-Plating of, with Copper (Ch. Margot)	25, 603	26 196
—, —, Electrolytic, Sodium in (H. Moissan)	25	87
—, —, Generator for the Manufacture of (C. E. Guye)	26	93
—, —, Impurities in Commercial (Henri Moissan)	23	797
—, —, Utensils (Balland)	24	647
American Gutta-Percha (L. Morisse)	23	108
Ammonia, Formation of, in the Electrolysis of Nitric Acid (R. Ihle)	26	104
Analysis, Electrolytic, of Commercial Copper (A. Hollard)	26	85
—, —, Spectrum, of the Carbons of an Electric Furnace (H. Deslandres)	24	646
Andreoli, A., Progress of the Electrolysis of Chloride Solutions	25	248
—, —, E., Indirect Electrolysis	25	251
Angström, K., Simple Method of Photographically Representing the Infra-Red Spectrum	25	243
Anizan, J., New Mercadier and Anizan Microphone	24	227
Anney, J. P., The Embrun Water-Power Installation	21	467
—, —, The Genoa Power Station... ..	22	272
Anode, Experiment showing that α Rays emanate from the (de Heen)	25	340
—, —, Rays (C. Maltézos)	26	645
—, —, —, Existence of (P. de Heen)... ..	26	444
Anti-Anode System, Phosphorescent, and the Anode Rays (C. Maltézos)	26	645
Appleyard, Rollo, Formation of Mercury Films by an Electrical Process	26	776
—, —, Influence of Temperature on Resistance and Inductive Capacity of Dielectrics	25	723
Arc, Alternate-Current, Contribution to the Study of (G. Claude)	23	244
—, —, Back E.M.F. of the (F. Stenger)	21	347
—, —, Electric, Constitution of the (L. Thomas)	23	810
—, —, —, New Method of Producing (M. Belloc)... ..	23	801
—, —, —, Temperature of (J. Violle)	24	223
Arcs (Small) and Incandescent Gas Lamps (C. Heim)	22	471

	VOL.	PAGE
Argon, Attempts to Combine Chemically (D. Berthelot)	24	584
—— in Atmospheric Nitrogen, Demonstrating Presence of (Cuntz)...	24	569
——, Spectrum of, and of the Aurora Borealis (D. Berthelot) ...	24	566
Armature Current on Magnetic Field, Reaction of (T. Fischer-Hinnen)	22	264
——, Direct, Alternating, and Polyphase, Comparative Output of (H. George)	21	533
—— of Dynamo Machines, Loss of Energy by Hysteresis in (Dr. M. Corsepius)	22	152
Arno, R., Rotating Electric Field, and Rotations produced by Elec- trostatic Hysteresis	22	269
——, Electrostatic Rotation of Rarefied Gases	24	226
Arnold, E., Non-Synchronous Motors for Ordinary Alternate Currents	22	475
Arons, L., Lecture Experiment with Hertz Oscillations	21	469
Arrester, Lightning, The Doane	23	241
Asch, Anton, Hot-Wire Voltmeter by Hartmann and Braun	22	365
Ascoli, Relation in Batteries between E.M.F. and Specific Heat ...	21	468
Atmosphere, Unstable Equilibrium of the, and Formation of Thunder- storms (W. Bezold)	25	259
——, Variation of Electric Condition of High Regions of, during Fine Weather (G. Le Cadet)	26	455
Aubel, E. van, Becquerel's Formula relating to Magnetic Rotary Polarisation	26	98
——, Electrical Resistance of a few New Alloys	24	383
——, Hall Phenomenon, and Measure of Magnetic Fields	21	638
——, Influence of Magnetism on Length of a Bar of Bismuth	21	751
——, Transparency of Bodies to x Rays	26	96
——, and R. Paillot, Comparison of Electrical and Thermal Con- ductivity of Alloys	25	602
Aurora Borealis, Oscillations of (J. Trowbridge)	23	93
——, Spectrum of (D. Berthelot)	24	566
Axial Nature of Magnetic Lines of Force deduced from the Presence of the Hall Phenomenon (F. Kolacek)	25	93

B.

Bachmetjew, P., Some Phenomena in Permanent Magnetism	21	42
Back E.M.F. of the Arc (F. Stenger)	21	347
Bacteria (Live), Influence of Induced Currents on Orientation of (L. Lortet)	25	587
Bacteriological Toxines, Action of High-Frequency Currents on (D'Arsonval and Charrin)	25	334
Bagard, H., The Hall Phenomenon in Liquids	25, 240	26 97
Balance, Induction, New Form of (Wien)	22	620
Balland, Aluminium Utensils	24	647
Ballistic Galvanometer, Use of, when the Transient Current is not of Short Duration (P. Weiss)	25	330
Baly, E. C. C., Separation and Striation of Rarefied Gases by the Electric Discharge	22	366

	VOL.	PAGE
Bangs, L. J., and K. E. Guthe, Electrical Conductivity of Concentrated Sulphuric Acid	25	603
Banti, A., Experiments on Non-Synchronous Single-Phase Motors ...	23	241
——, H., Magnetisation of Nickel under Mechanical Strain ...	22	149
Barbare, A., Telephonic Cables with Dry Air Circulation	23	804
Barmen Central Station (F. Uppenborn)	22	263
Barthélemy and Oudin. (See Oudin.)		
Batteries (Galvanic), Preparation of Zinc Electrodes for (Moseley) ...	22	471
—— in which Iron forms one of the Elements, Influence of Magnetism on Electro-motive Forces of (A. Lala and A. Fournier)	25	741
——, Relation in, between E.M.F. and Specific Heat (Ascoli) ...	21	468
——, Secondary, on a Class of (L. Poincaré)	24	386
Battery, Electric, with an Orange (Trotter)	26	329
——, Fusion of Metallic Wires by, Discharge of (Maurain) ...	25	240
—— (Secondary) Plates, Local Action in (Kugel)	21	349
Beaulard, F., Specific Inductive Capacity of Glass	23	809
——, Specific Inductive Power of Glass	25	81
Becquerel, H., Explanation of some of G. Le Bon's Experiments ...	26	641
——, Invisible Radiations emitted by Phosphorescent Bodies ...	25	451
——, Law of Discharge of Electrified Uranium in Air	26	456
——, New Properties of the Invisible Radiations emitted by different Phosphorescent Bodies	25	453
——, Properties of Uranium Rays	25	740
——, Radiations emitted by Phosphorescence	25	339
——, Researches on the Uranium Rays	26	446
——-Rays, Thermo-Luminescence provoked by (J. J. Borgmann)...	26	458
Becquerel's Formula relating to Magnetic Rotary Polarisation (E. van Aubel)	26	98
Behn, U., Striated Arrangement of Galvanic Deposits	23	252
Behn-Eschenburg, Dr., Alternate-Current Motor capable of Regulation	22	622
——, Increasing the Number of Exciting Phases for the Production of Rotary Magnetic Fields	23	250
Belloc, New Method of Producing the Electric Arc	23	801
Benardos System of Electric Welding (C. Richter)	23	784
Benoist, L., Law of Transparency of Gases to x Rays	26	180
——, Three-Gold-Leaf Electroscope	26	97
—— and Hurmuzescu, Discharge of Bodies by x Rays	26	331
——, Action of x Rays on Electrified Bodies	25	591
Berget, A., Magnetic Expansion of Iron	22	473
Berlin Electricity Works, Experience of the (Passavant)	23	603
Berne Municipal Central Station (J. Blondin)	26	179
Berson and Bonasse, Elasticity of Torsion of an Oscillating Wire ...	23	798
Berthelot, Attempts to Combine Argon Chemically	24	564
——, Electric Absorption of Nitrogen by Carbon Compounds ...	26	448
——, Limits of Electrolysis	23	349
——, New Method of Measuring Temperatures	24	569
——, Spectrum of Argon and of the Aurora Borealis	24	566
—— and Vieille, Explosive Properties of Acetylene	25	730
Bertin-Sans, H., and A. Imbert, Diffusion of Röntgen Rays	25	453
Bezold, W., Formation of Thunderstorms, and Unstable Equilibrium of the Atmosphere	25	259
Biernacki, V., Resistance of an Electric Spark	25	82

	VOL.	PAGE
Bigourdau, G., Comparison of Duration of Oscillation of Two Pendulums regulated approximately to the same Period	26	317
Bilbao Harbour, Electricity in Construction of	23	240
Billig and Strecker, Measurements of Coefficient of Self-Induction of various Telephones	21	532
Birkeland, R., Cathode Rays under the Action of Strong Magnetic Forces	26	104
——, Magnetisation produced by Hertzian Currents: A Magnetic Dielectric	23	803
Bismuth, Electric Conductivity of, Effects of Magnetic Fields on (J. B. Henderson)	24	92
——, Influence of Magnetism on the Length of a Bar of (E. van Aubel)	21	751
——, Resistance of, to Variable Currents (A. Sadovsky)	24	571
Bird, F., and W. H. Harvey, Notes on Brush Discharges in Gases ...	22	624
Black Light (Perrigot)	26	637
Bleaching, Electric, Knœffler and Gebaur System of	23	347
Bleiberger Bergwerks-Union, Carinthia, Electric Transmission of Power in Mines of	25	330
Bleunard and Labesse, Passage of Röntgen Rays through Liquids ...	25	453
Blondel, A., Direct Measurement of Mean Spherical Intensities of Sources of Light	24	563
——, New Applications for Oscillographs	26	452
——, Photometric Units	26	637
——, Simplified Method for Calculating Polyphase Alternating Currents	23	348
Blondin, J., Central Station of the Berne Municipal Installations ...	26	179
——, Central Station of Wynau	26	179
——, Determination Electrically of the Mechanical Equivalent of Heat	22	625
Blondlot, R., Propagation of Electro-magnetic Waves in Ice, and Dielectric Power of that Substance... ..	24	98
Boats, Electric Traction of, on the Burgundy Canal	26	184
Boccali, C., Comparison of Vacua of Glow Lamps	21	532
Bockenheim, Distribution of Electrical Energy at, by Polyphase and Continuous Currents (C. Jacquin)	22	328
Boiler Tests made at the Frankfort Exhibition (J. Reyval)	24	382
Boistel, E., The Steinmetz Monocyclic System of Distribution	24	649
Bolometric Researches on a Unit of Light (Lummer and Kurlbaum) ...	23	794
Bonasse and Berson, Elasticity of Torsion of an Oscillating Wire ...	23	798
Bordier, H., New Method of Measuring Electric Capacities, based on the Sensitiveness of the Skin	24	648
Borgmann, J. J., Thermo-Luminescence provoked by Röntgen Rays and Becquerel Rays	26	458
—— and A. L. Gerchun, Action of Röntgen Rays on Electrostatic Charges, and on the Explosive Distance	25	341
Boucher, A., Water-Power Installation at Vallorbes	21	350
Boucherot, P., Cost of High-Pressure Lines	23	99
——, Electric Lighting and Transmission of Power by Polyphase Currents in Messrs. Weyher and Richemond's Works	24	215
——, Synchronous and Non-Synchronous Alternating-Current Motors	25	237
——, Theory of Rotary Field Machines	23	238

ABSTRACTS.

BOU—CAB 87

	VOL.	PAGE
Boucherot, Transmission of Power at Messrs. Menier's Factory at Noisiel	23	619
Bordeaux-Bouscat-Vigean Electric Tramway (A. Hess)	23	341
Bourquin, J., Employment of Gas Engines in Lighting Stations	23	340
Bouvier, E. L., Telegraphic Cable attacked by Termites	25	738
Brake for Measuring Efficiency of Small Motors (C. Maréchal)	26	449
——— Regulator, Electric (C. E. Guye)	26	94
Branly, E., Electrical Resistance at the Contact of Two Metals	24	639
———, Property of Discharging Electrified Bodies produced in Gases by Incandescent Bodies and by Electric Sparks	25	735
———, Resistance of Thin Metallic Films	25	337
Brass. (See Alloys, Copper-Zinc.)		
Braun and Hartmann, Hot-Wire Voltmeter by (Anton Aseh)	22	365
Breslau Central Station (C. Dihlmann)	21	347
Bridges, Bascule, Connection of Overhead Trolley Wires on	26	453
Brion, G., Transition of Carbon from the Non-Conducting to the Conducting Condition	26	106
British Association Standard Resistances compared with those of Physikalisch-Technischen Reichsanstalt (St. Lindeck)	26	333
Bronze Wires for Telegraphic Purposes (E. Buels)	21	755
Brown, J., Theory of Electrolytic Conduction of Clausius, and Recent Evidence of the Dissociation Theory of Electrolysis	21	354
Bruck, Fürstenfeld-, Electricity Works	22	470
Bruger, T., Motor Meters, with Special Reference to those of Messrs. Hartmann & Braun: Alternating-Current Motor Meters	25	102
Brunhes, H., Effect of an Alternating Electro-motive Force on the Capillary Electrometer... ..	24	564
Brunswick, E. J., Electrical Industry in the United States	23	343
Brush Discharges in Gases (W. H. Harvey and F. Bird)	22	624
Brutschke and Shunpff System of Electric Ploughing	25	87
Brylinski, E., Capacity of Overhead Lines	21	530
Buda-Pesth Central Station (A. Moutier)... ..	26	182
———, Tramways (A. Moutier)	26	322, 326
Buels, E., Bronze Wires for Telegraph Purposes	21	755
Buguet, A., The Röntgen Phenomenon	25	734
———, and C. Gascard, Action of x Rays on the Diamond	25	339
Bulbs, Glow-Lamp, The Carbon Deposit in (E. L. Nichols)	22	364
Bungetziano, W., Diffraction of the x Rays	25	585
Burstall, F. W., Use of Bare Wire for Resistance Coils... ..	25	725
Burgundy Canal, Electric Traction of Boats on	26	184

C.

Cable (Concentric) Phenomena in Alternate-Current Working (L. Neustadt)	22	477
———, Pacific	24	103
———, Telegraphic, attacked by Termites (E. L. Bouvier)	25	738
Cables, Felten and Guillaume (1893)	23	461
———, Telephonic, with Dry Air Circulation (A. Barbaret)	23	804

	VOL.	PAGE
Cadmium Cell, Weston Standard (Jaeger and Wachsmuth) 24, 96	25	726
Cailletet and Collardeau, Effect of Pressure on Electric Accumulators	24	105
———, Occlusion of Electrolytic Gases by Porous Bodies, and especially by Metals of the Platinum Group ...	24	105
Calais Central Station	24	220
Calcium Carbide, Regnoli Furnace for the Manufacture of ...	26	780
Calculation of Overhead Conductors for Electric Traction (W. Dierman)	24	99
Calibrating Measuring Instruments for Alternating Currents, Method used, by the Allgemeine Electricitäts-Gesellschaft (K. Wilkens)	26	334
Callendar, H. L., Construction of Platinum Thermometers ...	21	43
Campbell, A., Instruments for Direct Measurement of the Frequency of Alternating or Pulsating Electric Currents	25	724
Canal, Burgundy, Electric Traction of Boats on	26	184
Capacities, Electric, Method of Measuring, based on the Sensitiveness of the Skin (H. Bordier)	24	648
Capacity, Electrostatic, of Coils, and its Influence on Measurement of Coefficients of Induction by the Wheatstone Bridge	24	378
——— in Alternating-Current Circuits, Part played by (A. Hess) ...	23	103
——— of Condensers, Absolute Measurement of, by Means of Alternate Currents (L. Lombardi)	26	102
——— of Condensers, Measurement of, with Alternating Currents (J. Sahulka)	23	97
——— of Lead Accumulators, Influence of Rate of Discharge on (W. Peukert)	26	652
——— of Overhead Lines (E. Brylinski)... ..	21	530
———, Specific Inductive. (See Specific Inductive Capacity.)		
Capillary Electrometer, Effect of an Alternating Electro-motive Force on (H. Brunhes)	24	564
Carbide of Calcium, Regnoli Furnace for the Manufacture of... ..	26	780
——— Uranium (Henri Moissan)	25	345
Carbon and Iron, Transformation of, with Respect to Tempering (Georges Charpy)	23	802
——— Cell, Thermo-chemical (Desiré Korda)	24	387
——— Compounds, Electric Absorption of Nitrogen by (Berthelot) ...	26	448
——— Cylinders (Porous) in Electrolytic Researches (W. Löb) ...	26	107
——— Deposit in Incandescent-Lamp Bulbs (E. L. Nichols)	22	364
———, ——— (N. Popow)	26	183
———, Electro-chemical Equivalent of (A. Coehn)	26	779
——— Electrode, The Liveing	23	339
———, Electrolytic Solution and Separation of (A. Coehn)	26	103
———, Electrolytic Solution of (F. Vogel)	26	103
———, Jacques's Method of obtaining Electricity direct from ...	25	586
———, Reduction of Wolfram by, in Electric Furnace (E. Defacqz)	26	99
———, Transition of, from the Non-Conducting to the Conducting Condition (G. Brion)	26	106
———, Vaporisation of (Henri Moissan)... ..	24	104
Carbons, Electric Furnace, Spectrum Analysis of (H. Deslandres) ...	24	646
Carburization of Iron, Effect of Electricity on (J. Garnier)	22	630
Cardani, Simple Absolute Electrometer	21	348
———, Heating of Bare Wires	21	754
Casting, Electric, Zener Process... ..	25	254
———, ———, Slavianoff Process (A. Lohmann)	24	557

	VOL.	PAGE
Cathode Apparatus, Producing α Rays (Fouveau de Courmelles and G. Seguy)	26	457
——, Passage of Radiation from, through Metallic Films (H. Hertz)	21	345
——Radiation Beams, Apparent Repulsion between Two (Wiedemann and Ebert)	21	531
——Rays and some Phenomena in Vacuum Tubes (C. Maltézos)... ..	26	643
——Rays in Gases at Atmospheric Pressure and in High Vacua (P. Lenard)	23	335
——, Longitudinal Tension of (Colard)	26	87
——, Magnetic Deflection of (P. Lenard)	23	605
——, New Property of, revealing their Complex Nature (H. Deslandres)... ..	26	639
——, New Properties of (J. Perrin)	25	249
——, Reflection of, by Glass and Metal, shown in Crookes Tube of Spherical Form (C. Séguéy)	25	246
—— under the Action of Strong Magnetic Forces (R. Birkeland)	26	104
——, Velocity of (J. J. Thomson)	24	90
Cauro, J., Electrostatic Capacity of Coils, and its Influence on Measurement of Coefficients of Induction by the Wheatstone Bridge	24	378
Cell, Carbon Thermo-chemical (Desiré Korda)	24	387
——, The Clark, The E.M.F. of (Lindeck)	21	465
——, when Producing a Current (S. Skinner)	24	95
——, Cupron- (Umbreit and Mathes)	26	108
——, Dry, with Cellulose Filling (Germain)	22	471
—— of High and Constant E.M.F. (Morisot)	24	643
——, Standard Cadmium (Jaeger and Wachsmuth)	24, 96	25 726
Cells, E.M.F. of, New Method of Measuring (D. Negreanu)	26	333
Cellulose Filling, Dry Cell with (Germain)	22	471
Central Station, A Lightning Flash in a (P. Robert)	23	616
——, Aix-la-Chapelle (F. Uppenborn)	23	441
——, Altona	22	624
——, Barmen (F. Uppenborn)	22	263
——, Berne Municipal Installations (J. Blondin)	26	179
——, Breslau (C. Dihlmann)	21	347
——, Buda-Pesth (A. Moutier)	26	182
——, Calais	24	220
——, Christiania	22	472
——, Copenhagen (F. Uppenborn)	23	248
——, Düsseldorf	22	469
——, Frankfort	24	219
——, Hanover (F. Uppenborn)... ..	22	363
——, St. Ouen (Guilbert)	26	187
——, Stockholm (F. Uppenborn)	23	443
——, Wynau (J. Blondin)	26	179
—— Stations (F. Ross)	21	536
——, Questions relating to the Working of (G. Claude)	23	610
Center and Fergusson, Variation of Light in Glow-Lamps with Current and E.M.F.	21	346
Charges, Electrostatic, Action of Röntgen Rays on, and on the Explosive Distance (Borgman and Gerchun)	25	341

	VOL.	PAGE
Charging Condensers, Process of (Kleiner and Seiler)	26	651
— of Objects by means of x Rays (G. Nannes)	26	652
Charpentier, Aug., The Change of Colour of Quickly Changing Lights in Terms of their Duration	26	319
—, Irradiation Colours in Luminous Excitations of Short Dura- tion	26	318
Charpy, G., Temperatures of Transformation of Iron and Steel ...	24	96
—, Transformation of Iron and of Carbon with respect to Tempering	23	802
Charrin and D'Arsonval, Action of High-Frequency Currents on Bacteriological Toxines	25	334
Chassy, A., Electro-capillary Experiments	26	189, 652
Chédeville, F., Utilisation of Small Waterfalls	22	631
Chemical Action of the Röntgen Rays (K. Zickler)	25	608
— Nature of Bodies, Influence of, on their Transparence to Röntgen Rays (Meslans)	25	336
— Reactions, Study of, by means of Electricity (J. Garnier) ...	23	339
— Syntheses by means of the Silent Discharge (Losanitsch and Jovitschitsch)	26	780
Chevallier and Gossart, Mechanical Action produced by a Crookes Tube, analogous to the Photogenic Action discovered by Röntgen	25	338
Chevres-Geneva, Transmission of Power (C. E. Guye)	25	252
Chloride Solutions, Electrolysis of, Progress of the (A. Andreoli) ...	25	248
Christiani, W., Theory of Inductionless Overhead Wiring without Twist	21	537
Christiania Central Station	22	472
Chromium and its Alloys, Manufacture of, by Electrolysis	23	614
Circuit, Magnetic, Descartes on the	21	754
—, —, Remarks on the (C. P. Steinmetz)	21	537
Circuits, Closed Iron, Theory of Inductive Resistance in (C. P. Steinmetz)	25	604
—, Complete Metallic for Electric Tramways, Importance of (J. M. Vail)	23	459
Claret-Vuilleumier System of Electric Tramway at Lyons (Vuilleumier)	24	218
— of Electric Tramways: Paris-Romainville	25	594
Clark Cell, E.M.F. of the (Lindeck)	21	465
— when Producing a Current (S. Skinner)	24	95
Classen, To Increase the Sensibility of the Deprez Galvanometer ...	25	603
Claude, G., Contribution to the Study of the Alternate-Current Arc	23	244
—, Questions relating to the Working of Central Stations ...	23	610
Clausius, Electrolytic Conduction Theory of (J. Brown)	21	354
Closed Iron Circuits, Theory of Inductive Resistance in (C. P. Steinmetz)	25	604
Coehn, A., Electro-chemical Equivalent of Carbon	26	779
—, Electrolytic Solution and Separation of Carbon	26	103
Cohn, E., The Gordon-Winkelmann Method of Measuring Specific Inductive Capacity	21	534
Coils of Absolute Electro-Dynamometers (A. Gray)	21	355
Colard, Longitudinal Tension of Cathode Rays	26	87
Colardeau, E., Form of Crookes Tube producing Photographic Images of Great Sharpness with Short Exposures	26	100

	VOL.	PAGE
Colardeau. (<i>See also</i> Cailletet and Colardeau.)		
Colour, Change of, of Quickly Changing Lights in terms of their Duration (Aug. Charpentier)	26	319
Colours, Irradiation, in Luminous Excitations of Short Duration (Aug. Charpentier)	26	318
———, Mineral, Preparation of certain, by Electrolysis (Anon.) ...	23	612
Colson, R., Measurement of Resistance by means of Alternating Currents and Telephone	24	228
Combustion of Acetylene (H. Le Chatelier)	25	250
Compensation of Directive Forces, and the Sensitiveness of the Movable-Coil Galvanometer (A. Abraham)	25	592
Concentric Cable Phenomena in Alternate-Current Working (L. Neustadt)	22	477
Condenser Discharging through Two Paths (Garbasso)	26	783
——— Oscillations, Electric, produced with Multiple-Plate Influence Machines (Topler)	25	258
———, Position of the Electricity in (A. Kleiner)	23	793
Condensers (A. Kleiner)	26	651
———, Capacity of, Absolute Measurement by means of Alternate Currents (L. Lombardi)	26	102
———, Capacity of, Measurement with Alternating Currents (J. Sahulka)	23	97
———, Charging of (Kleiner and Seiler)	26	651
Conducting Power, Sudden Acquisition of, by a Series of Discrete Metallic Particles (Oliver Lodge)	23	252
Conductivity, Electrical, of Bismuth, Effects of Magnetic Fields on the (J. B. Henderson)	24	92
———, ———, of Concentrated Sulphuric Acid (K. E. Guthe and L. J. Bangs)	25	603
———, ———, of Iron and Nickel, Dependence on Temperature (W. Kunz)	23	338
——— of a Solution, Alteration of, by Addition of Small Quantities of a Non-Conductor (R. J. Holland)	23	94
——— of Dielectric Liquids, Measuring the (K. R. Koch)	23	97
———, Electrical and Thermal, of Alloys (Edm. van Aubel and R. Paillot)	25	602
———, Electrolytic. (<i>See</i> Electrolytic Conductivity.)		
———, Specific, of Copper (J. Teichmüller)	23	795
———, ———, of the Copper-Zinc Alloys (R. Haas)	23	791
———, Surface, of Glass in Moist Air (A. Krummenacker)	25	601
Conductor carrying Alternating Currents, Variation of Temperature of a (C. E. Guye)	26	450
———, Middle, in the Three-Wire System (E. Lohr)	25	97
———, Small, with very Large Ends, Terminal Resistance of (W. Shrader)	21	44
Conductors, Lightning, Earth-Plates for (G. Herholz)	22	151
———, Overhead, for Electric Traction, Calculation of (W. Dierman)	24	99
———, Resistance of, to Alternating Currents (Mascart)	25	244
Conduit System of Buda-Pesth Tramways (A. Moutier)	26	326
Constant Electric Fields, Rotations in (G. Quincke)	26	328
"Constantan" Wires for Protecting Telegraphic Apparatus	23	461
Contact of Two Metals, Electrical Resistance at the (E. Branly)	24	639

	VOL.	PAGE
Contact Resistance of Two Conductors, Effect of Electric Rays on (V. Von Lang)	25	255
Continuous - Current- and Polyphase-Motors, Comparison between (Duez)	24	644
Continuous Currents, Distribution of Electrical Energy by, at Bockenheim (C. Jacquin)	22	628
———, Fusion of Metallic Wires by (Maurain)... ..	25	240
———, Grassot Electricity Meter for (A. Perren)	23	800
———, Measuring Electrolytic Conductivity by means of (W. Stroud and J. B. Henderson)	26	195
———, Passage of, through Organic Tissues, Phenomena produced by (G. Weiss)	26	321
———, Power Transmission by Series Machines (E. Schultz)	23	442
Controlling Apparatus for Lifts, Siemens and Halske (H. Langer) ...	25	103
Converting Monophase- into Triphase-Currents, Transformer for (Desiré Korda)	23	799
Copenhagen Central Station (F. Uppenborn)	23	248
Copper, Electrolytic Analysis of (A. Hollard)	26	85
———, Electro-Plating of Aluminium with (Ch. Margot)	25, 603	26 196
——— -Silicon Alloy (Vigouroux)... ..	25	345
———, Specific Conductivity of (J. Teichmüller)	23	795
——— Wire, Electrical Resistance of Pure (Lagarde)	22	635
——— -Zinc Alloys, Specific Conductivity and Temperature Coefficient of (R. Haas)	23	791
Corbino, O. M., Variation of the Dielectric Constants of an Insulator by the Effect of Tension thereon	26	333
Corsepius, M., Loss of Energy by Hysteresis in Dynamo Armatures... ..	22	152
Cost, Comparative, of Monophase and Polyphase Alternating-Current Systems (H. Georges)	24	561
Cost of High-Pressure Lines (P. Boucherot)	23	99
Coulomb's Laws, Electrostatic. Principles not founded on (H. Pellat)	24	565
Coulombmeter (Siemens and Halske)	21	531
Couy, Electro-capillary Properties of Dilute Sulphuric Acid	25	84
Cowan, E. W., and A. Still, Regulation of Pressure and Reduction of Light-Load Losses in Alternating-Current Systems of Electric Supply	25	563
Crane, Electric Travelling (C. E. Guye)	26	94
Crehore and Squier, Discussion of the Currents in the Branches of Wheatstone's Bridge, where each Branch contains Resistance and Inductance, and there is an Harmonic Impressed Electromotive Force	26	331
Critical Point, Villari, in Nickel (A. Heydweiller)	23	789
Crookes Apparatus, On a (H. Pflaum)	25	455
——— Tube for Use with Alternating-Current Dynamos (Oudin and Barthélemy)	26	90
———, ———, Mechanical Action produced by, analogous to the Photogenic Action discovered by Röntgen (Gossart and Chevallier)	25	338
——— of Spherical Form, showing Reflection of Cathode Rays in Glass and Metal (C. Séguay)	25	246
———, ———, producing sharp Photographic Images with short Exposures (E. Colardeau)	26	100

	VOL.	PAGE
Crookes Tube, Transformation of Diamond into Graphite in (H. Moissan)...	26	453
Crystallised Media, Comparison of Absorption of Luminous Rays and Röntgen Rays by (G. Agafonoff) ...	26	458
Culmann, P. Magnetisation by very Small Forces ...	22	623
Cuntz, Demonstrating Presence of Argon in Atmospheric Nitrogen ...	24	569
Cupron Cell (Umbreit and Mathes) ...	26	108
Curie, P., Magnetic Properties of Bodies at different Temperatures ...	22	156
Current and Pressure Curves of Alternators (G. Rössler and W. Wedding) ...	23	787
Current, Alternating. (<i>See</i> Alternating Current.)		
—, Circuits, Action of Strong on Weak (von Wietlisbach) ...	21	535
—, Continuous. (<i>See</i> Continuous.)		
—, Physiological Action of, at Moment of Closing Circuit (Dubois) ...	26	784
Currents, Earth. (<i>See</i> Earth.)		
—, Fluid, Generation of Electricity by (H. Usener) ...	25	457
—, Hertzian, Magnetisation produced by (Birkeland) ...	23	803
—, of High Frequency, Therapeutic Action of (A. de Berlioz) ...	24	387
—, Induced, Influence of, on Orientation of Live Bacteria (L. Lortet) ...	25	587
—, Intermittent, Rapidly: Physical, Physiological, and Therapeutic Effects (Boisseau du Rocher) ...	26	191
—, Passage of Weak, through Electrolytes (R. Lohnstein) ...	21	753
—, Periodic, Electro-chemical Method for Automatically Recording (P. Janet) ...	23	807
—, Polyphase. (<i>See</i> Polyphase.)		
—, Sinusoidal, Measuring Difference of Phase between Two (A. Hess) ...	23	450
—, Tesla, Experiments with (F. Himstedt) ...	23	787
—, Variable, Resistance of Bismuth (A. Sadovsky) ...	24	571
Cylinders, Iron, Magnetisation of (O. Grottrian) ...	23	793
Czermak, P., Pin-Hole Camera Pictures with Röntgen Rays ...	26	463

D.

Damper for Quadrant Electrometer Needle (Haga) ...	26	103
Dariex and Rochas, Cause of the Invisibility of the x Rays ...	25	340
D'Arsonval, A., New Method of Electrifying the Human Body: A Measure of Magnetic Fields of High Frequency ...	24	563
—, Photography through Opaque Bodies ...	25	452
—, and Charrin, Action of High-Frequency Currents on Bacteriological Toxines ...	25	334
D'Arsonval Galvanometer, High Resistances used in connection with the (F. J. Smith) ...	22	366
De Berlioz, A., Therapeutic Action of Electric Currents of High Frequency ...	24	387
Decharme, C., Effect of Local Heating on Permanent Magnets ...	21	348

	VOL.	PAGE
Decharme, C., Experiments on various Methods of Magnetising Steel	21	348
——, Movements of a Magnet floating on Mercury carrying a Current	22	270
Defacqz, E., Reduction of Wolfram by Carbon in the Electric Furnace	26	99
Delahaye, P., Researches on Materials useful in the Manufacture of Incandescent Lamp Filaments	25	347
Densler, Dr., The Sessach-Gelterkinden Street Railway	21	42
De Place, Captain, The Schiséophone	21	749
Depolarisation of Platinum and Mercury Electrodes (Meyer and Klein)	26	330
Deposit in Glow-Lamp Bulbs, Carbon (E. L. Nichols)... ..	22	364
——, (N. Popow)	26	183
Deposits, Galvanic, Striated Arrangement of (U. Behn)	23	252
Deprez Galvanometer, Increasing the Sensibility of (Classen)	25	603
Dery, J., and L. Weissenbruch, Electric Train-Lighting	23	235
Descartes on the Magnetic Circuit... ..	21	754
Desilverising Lead, Electrolytic Process of (D. Tommasi)	26	334
Deslandres, H., Spectrum Analysis of Carbons of an Electric Furnace	24	646
——, New Property of the Cathode Rays, which reveals their Com- plex Nature	26	639
Destot, Physiological and other Troubles due to the x Rays	26	646
Dettmar, G., "Kruppin" (a New Resistance Material)	23	95
Development (Photographic) of Dry Plates by Electricity	22	365
Diamond, Action of x Rays on the (A. Buguet and A. Gascard)	25	338
——, Transformation of, into Graphite in the Crookes Tube (H. Moissan)	26	453
Diaphragms, Hide, Electric Endosmose of Tannic Acid Solutions through (F. Roever)	25	326
Dielectric Constants of an Insulator, Variation of, by the Effect of Tension (O. M. Corbino)	26	333
—— Liquids, Measuring the Conductivity of (K. R. Koch)... ..	23	97
——, A Magnetic (Birkeland)	23	803
—— Power of Ice (R. Blondlot)	24	98
—— (A. Pérot)	24	99
Dielectrics, Fluid Unelectrified, in Electric Fields, Measurement of the Force which acts on (H. Pellat)	26	650
——, Electric Force acting at Surface of Separation of Two (H. Pellat)	24	565
——, Influence of Temperature on Resistance and Inductive Capacity of (R. Appleyard)	25	723
——, Researches on (J. Lefevre)	23	105
Dieppe, Electric Lighting of	23	102
Dierman, W., Calculation of Overhead Conductors for Electric Traction... ..	24	99
Dieudonné, E., Electric Tramway of Enghien-St. Gratien-Mont- môrencey	26	781
Diffraction of the x Rays (D. Bungetziano)	25	585
Diffusion of Light (W. E. Sumpner)	22	268
—— of Röntgen Rays (A. Imbert and H. Bertin-Sans)	25	453
Dihlmann, C., The Breslau Central Station	21	347
Dimensions of Electric and Magnetic Quantities (P. Joubin)	26	321

	VOL.	PAGE
Discharge by Röntgen Rays: Part played by the Surfaces acted upon (J. Perrin)	26	445
——, Electric, Separation and Striation of Rarefied Gases by (E. C. C. Baly)	22	366
——, Explosive, in Air. (<i>See</i> Explosive.)		
—— of Bodies by α Rays (Benoist and Hurmuzescu)	26	331
—— of Electricity from Points, Absolute Measurements on the (J. Precht)	22	477
—— ——— ——— ——— ——— produced by very High Frequency Alternating Currents (K. Wesendonck)	25	258
—— ——— through Exhausted Tubes without Electrodes (J. J. Thomson)	21	352
—— of Lead Accumulators, Influence of Rate of, on Capacity (W. Peukert)	26	652
—— of Electrified Uranium in Air, Law of (H. Becquerel)	26	456
—— produced by a Spark, and the Working of the Hertz Exciter (Swyngedaauw)	26	449
——, Silent, Chemical Syntheses by means of (Losanitsch and Jovitschitsch)	26	780
Discharges, Brush-, in Gases (W. H. Harvey and F. Bird)	22	624
—— by means of Röntgen Rays: Influence of Temperature and Pressure (J. Perrin)	25	739
——, Electric, in Gases, Lehmann's Researches on (Lamotte)	25	89
——, Experiments with High-Frequency Electric (A. A. Campbell Swinton)	22	264
——, New Kind of Rays contained in Sparks produced by (E. Wiedemann)	25	253
Discharging Electrified Bodies by Gases, Action of the Electric Discharge on (E. Villari)	25	733
—— ——— ——— in Gases by Incandescent Bodies and by Electric Sparks (Edouard Branly)	25	735
—— ——— Conductors in Gases, by α Rays and Electric Sparks (E. Villari)	25	733
Disinfection Electric, by the Hermite Process (D. Farman)	24	375
Dispersion of Positive Electricity by Light, Supposed (J. Elster and H. Geitel)	25	256
Dissociation Theory of Electrolysis, Recent Evidence of the (J. Brown)	21	354
Distribution of Electric Oscillations in Wire Networks, (J. Klemencic)	23	96
—— by Polyphase Currents (J. L. Routin)	26	649
—— of Electrical Energy by Polyphase and Continuous Currents at Bockenheim (C. Jacquin)	22	628
—— ——— ——— in Paris (J. Laffargue)	24	651
——, Steinmetz Monocyclic System of (E. Boistel)	24	649
Disturbances Produced in Overhead Telephone Wires by Variable Currents in Neighbouring Conductors (Pierard)	24	223
Doane Lightning Arrester	23	241
Dolezalek and Küster, A Small Electric Furnace	26	780
Dolivo-Dobrowolski, Efficiency of Transformers	21	535
—— ———, Overcoming Induction of Telephone Wires	21	537
—— ———, Single and Multiphase Alternators of the General Electric Company of Berlin	24	379
Double Refraction of Electric Radiation (K. Mack)	24	551
Dover, U.S.A., Water-Power Station at	21	21

	VOL.	PAGE
Downes and Woodward System of Lead Fuses	26	786
Drude, P., Magneto-optical Phenomena	22	148
Dry Cell with Cellulose Filling (Germain)	22	471
Duane, W., and W. Stewart, Damping Action of the Magnetic Field on Rotating Insulators... ..	26	778
Dubois, Physiological Action of a Galvanic Current at Moment of Closing Circuit... ..	26	784
Du Bois, H., Ring Electro-Magnet for Production of Intense Fields ...	23	446
Duez, Comparison between Continuous- and Polyphase-Current Motors	24	644
Dujon, D., Life of Glow Lamps	21	346
Duperray, C., Optical Properties of a Cylinder of Glass rapidly Rotating in a Magnetic Field	26	101
Düsseldorf Central Station (F. Uppenborn)	22	469
Dwelschauvers-Dery, F. W., Reflection of x Rays	26	105
Dynamo Armatures, Loss of Energy by Hysteresis in (Corsepius) ...	22	152
——, Comparison of Two-Pole, and Multipolar Types (E. Schulz)	22	157
—— Machine by Th. Marcher, New	23	618
——, Notes on Theory of (Farman)	24	381
Dynamometer, Measurement of Coefficient of Self-Induction by Alternating Current and (Dr. J. Puluj)	21	46
Dynamometers, Electro-, The Coils of Absolute (A. Gray)	21	355

E.

Earth Currents (L. Palmieri)	24	388
—— at the St. Maur Observatory, Measurements of (W. de Fonvielle)	22	474
—— Plates for Lightning Conductors (G. Herholz)	22	151
Ebeling and Schmidt, Magnetic Properties of Recent Kinds of Iron, and the Steinmetz Coefficients of Magnetic Hysteresis	26	653
Ebert, H., and E. Wiedemann, Apparent Repulsion between Two Cathode Radiation Beams	21	531
——, ——, Experiments on Electro-dynamic Screening and Electric Shadows	22	620
Ebonite, Transparence of (Perrigot)	26	642
Efficiency of Motors of Small Power, Brake for Measuring (C. Maréchal)... ..	26	449
—— Transformers (Dolivo-Dobrowolski)	21	535
Egoroff and Géorgiewsky, Partial Polarisation of some Luminous Radiations under the Influence of a Magnetic Field	26	640
Elasticity of Torsion of an Oscillating Wire (Berson and Bonasse) ...	23	798
Electric Arc. (See Arc.)		
—— Bleaching	23	347
—— Casting Process, Slavianoff's (A. Lohmann)	24	557
——, Welding, and Soldering Process, Zerener's	25	254
—— Disinfection by the Hermite Process (D. Farman)	24	375

	VOL.	PAGE
E lectric Endosmose of Tannic Acid Solutions through Hide Dia-		
phragms (F. Roever)	25	326
——, Etching	23	99
—— Fields. (<i>See</i> Fields, Electric.)		
—— Furnace, A New (H. Moissan)	22	366
—— Industry in the United States (E. J. Brunswick)	23	343
—— Lifting Gear for Locomotive Works	25	461
—— Lighting. (<i>See</i> Lighting.)		
—— Miner's Lamp, The Sussmann	26	454
—— Oscillations in Wire Networks, Absorption and Distribution of		
(J. Klemencic)	23	96
—— Ploughing: Brutschke and Shunpff System	25	87
—— Quantities, Dimensions of (P. Joubin)	26	321
—— Resistance. (<i>See</i> Resistance, Electrical.)		
—— Spark. (<i>See</i> Spark.)		
—— Steering Gear of the Union Electricitäts-Gesellschaft	26	327
—— Tramway. (<i>See</i> Tramway.)		
—— Wave-Trains, passing through Layers of Electroyte (G. U.		
Yule)	23	98
—— Waves, Demonstration and Investigation of (Voller)	23	447
—— in Alcohol, Refractive Index of (H. O. G. Ellinger)	22	266
——, Mechanical Effects of, on Still Resonators (P. Lebedew)	23	790
—— Welding, Benardos System of (C. Richter)	23	784
Electrical Condition of a Liquid Surface, Influence of, on Heat of		
Vaporisation of the Liquid (E. Fontaine)	26	189
Electrically-Driven Rolling Mills	25	460
Electricity, Absolute Measurements on the Discharge of, from Points		
(J. Precht)	22	477
—— and Light, Experiments on (J. Elster and H. Geitel)	23	786
——, Development of Photographic Dry Plates by	22	365
—— direct from Carbon, Jacques's Method of obtaining	25	586
——, Discharge of, without Electrodes, through Exhausted Tubes		
(J. J. Thomson)... ..	21	352
——, Effect of, on Carburation of Iron (J. Garnier)... ..	22	630
——, Generation of, by Fluid Currents (H. Usener)	25	457
——, Positive, Supposed Dispersion of, by Light (J. Elster and		
H. Geitel)	25	256
—— Supply in Paris, "Le Secteur de la Rive Gauche" (J. Reyval)	25	342
Electrification of Gases exposed to Röntgen Rays, and the Absorption		
of Röntgen Radiation of Gases and Vapours (E. Rutherford)	26	460
——, New Process of (Ch. Henry)	26	317
——, whether produced by Vaporisation of various Conducting and		
very Fluid Liquids (P. Pettinelli)	25	458
Electrified Bodies, Action of α Rays on (Benoist and Hurmuzescu)	25	591
—— Röntgen Rays (A. Lafay)	25	593
Electrifying the Human Body, New Method of (A. D'Arsonval)	24	563
Electro-capillary Experiments (A. Chassy)	26	189, 652
—— Properties of Dilute Sulphuric Acid (Couy)	25	84
—— -chemical Actinometer (Ch. Maréchal)	24	107
—— Equivalent of Carbon (A. Coehn)	26	779
—— Method for Automatically Recording Periodic Currents		
(P. Janet)... ..	23	807
—— of Observing Alternating Currents (P. Janet)	23	453

	VOL.	PAGE
Electro-Chemistry, Industrial	23	339
Electrode, The Liveing Carbon	23	339
Electrodes Accumulator, Soldering (Strecker and Karrass)	26	105
—— for the Determination of the Resistance of Electrolytes, Some Forms of (F. Kohlrausch)	23	445
——, Mercury, Polarisation Capacity of (E. Orlich)... ..	26	105
——, Platinised, and the Measurement of Resistance (F. Kohlrausch)	26	329
——, Platinum and Mercury, Depolarisation of (Meyer and Klein)... ..	26	330
——, Zinc, for Galvanic Batteries, Preparation of (Moseley)	22	471
Electro-Dynamometers, The Coils of Absolute (Professor A. Gray)	21	355
Electrolysis, Dissociation Theory of (J. Brown)	21	354
——, Formation of Floating Metal Sheets by (F. Mylius and O. Fromm)	23	606
——, Indirect (E. Andreoli)	25	251
——, Limits of (Berthelot)	23	349
——, Manufacture of Chromium and its Alloys by	23	614
—— of Chloride Solutions, Progress of (A. Andreoli)	25	248
—— of Dissolved Alkaline Salts, Minimum E.M.F. necessary to produce (C. Nourrisson)... ..	23	245
—— of H Cl without a Membrane (F. Oettel)... ..	25	259
—— of Nitric Acid, Formation of Ammonia in (R. Ihle)	26	104
Electrolyte, Passage of Electric Wave-Trains through Layers of (G. U. Yule)	23	98
Electrolytes, Resistance of, Some Forms of Electrodes for the Deter- mination of (F. Kohlrausch)	23	445
——, Minimum E.M.F. necessary to produce Decomposition in (Max Le Blanc)	23	349
——, The Passage of Weak Currents through (R. Lohnstein)	21	753
Electrolytic Analysis of Commercial Copper (A. Hollard)	26	85
—— Bath, Thofern	24	566
—— Conduction Theory of Clausius (J. Brown)	21	354
—— Conductivity, Measuring, by means of Continuous Currents (W. Stroud and J. B. Henderson)	26	195
—— Determination of the Halogens (G. Vortmann)... ..	25	458
—— Gases, Occlusion of, by Porous Bodies (Cailliet and Colardeau)	24	105
—— Iron, Experimental Study of (L. Houlléviqne)	26	648
—— Preparation of Magnesium (F. Oettel)	25	458
—— of Mineral Colours	23	612
—— Purification of Sugar Solutions	23	460
—— Researches, Use of Porous Carbon Cylinders in (W. Löb)	26	107
—— Solution and Separation of Carbon (A. Coehn)... ..	26	103
—— of Carbon (F. Vogel)	26	103
Electro-Magnet, Ring, for Production of Intense Fields (H. Du Bois)	23	446
Electro-magnetic and Electro-static Units, Determination of the Ratio v. between (D. Hurmuzescu)	25	89
—— Radiations, Action of, on Films containing Metallic Powders (G. M. Minchin)	23	251
—— Rotation, A Phenomenon of (Jüllig)	22	623
—— Stress (E. Taylor-Jones)	24	555
—— Waves, Absorption of (A. Righi)... ..	26	785
——, in Ice, Propagation of (R. Blondlot)	24	98
Electro-Magnetism, Some Errors admitted as Truths in (Vaschy)	26	88

ABSTRACTS.

ELE—ELS 99

	VOL.	PAGE
Electro-Magnets, Winding of Alternate-Current (Thompson and Walker)	23	784
Electro-Metallurgy of Aluminium (G. Richard)	23	456
Electrometer, Absolute, for Measuring Small Differences of Potential (Perot and Fabry)	26	182
—, —, Simple (Cardani)	21	348
—, Capillary, Effect of an Alternating Electro-motive Force on (H. Brunhes)	24	564
— Quadrant, Needle, A Damper for (Haga)	26	103
—, Righi Idiostatic	24	385
Electro-motive Force, Alternating, Effect of, on the Capillary Electro-meter (H. Brunhes)	24	564
— — — — — and Specific Heat, On the Relation in Batteries between (Ascoli)	21	468
— — — — — necessary to produce Decomposition in Electrolytes, Minimum (Max Le Blanc)	23	349
— — — — — necessary to produce Electrolysis of Dissolved Alkaline Salts, Minimum (C. Nourrisson)	23	245
— — — — — of Cells, New Method of Measuring (D. Negreanu)	26	333
— — — — — of Magnetisation (D. Hurmuzescu)	24	111, 567
— — — — — of the Arc, The Back (F. Stenger)	21	347
— — — — — of the Clark Cell (Lindeck)	21	465
— — — — —, Variation of Light in Glow Lamps with Current and (Fergusson and Ceuter)	21	346
— — — — — Forces, Direct Method for Absolute Measurement of (C. Limb)	23	611
— — — — — of Batteries in which Iron forms one of the Elements, Influence of Magnetism on (A. Lala and A. Fournier)	25	741
Electro-optic Experiments (J. Elster and H. Geitel)	25	260
— — — — — Plating of Aluminium with Copper (Ch. Margot)	25, 603	26
— — — — — Refining. (See Refining.)		196
Electroscope, Three-Gold-Leaf (L. Benoist)	26	97
Electrostatic and Electro-magnetic Units, Determination of the Ratio v. between (D. Hurmuzescu)	25	89
— Capacity of Coils, and its Influence on Measurement of Coefficients of Induction by the Wheatstone Bridge (J. Cauro)	24	378
— Charges, Action of Röntgen Rays on, and on the Explosive Distance (Borgman and Gerchun)	25	341
— Field, Homogeneous; Polarisation Phenomena in (L. Lombardi and G. Ferraris)	25	457
— Hysteresis, Rotations produced by (R. Arno)	22	269
— Rotation of Rarefied Gases (Ricardo Arno)	24	226
Elements, Magnetic, Absolute Value of the, up to January 1st, 1897 (T. H. Moureaux)	26	186
Ellinger, H. O. G., Refractive Index of Electric Waves in Alcohol	22	266
Elongation, Magnetic, and Magnetic-Twist Cycles (C. G. Knott)	23	247
— Produced in Soft Iron by Magnetism (S. J. Lochner)	23	91
Elsas, A., Method of Determining Specific Inductive Capacity	21	351
Elster, J., and H. Geitel, Experiments on Light and Electricity	23	786
— — — — —, Electro-optic Experiments	25	260
— — — — —, The Supposed Dispersion of Positive Electricity by Light	25	258

	VOL.	PAGE
Embrun Water-Power Installation, The (J. P. Anney)	21	467
Endosmose, Electric, of Tannic Acid Solutions through Hide Dia- phragms (F. Roever)	25	326
Energy dissipated by Magnetisation (Maurain)	25	334
——, Electrical, Distribution of, by Polyphase and Continuous Currents at Bockenheim (C. Jacquin)... ..	22	628
——, Distribution of in Paris	24	651
——, Tivoli-Rome Transmission of (P. Marcillac)	23	106
——, Loss of, by Hysteresis in Dynamo Armatures (M. Corsepius)... ..	22	152
——, Radiant, Measurements with (L. Zehnder)	24	91
——, Variations of (Vaschy)	26	320
Engelmeyer, P. Clémentitch de, Measure of Difference of Phase ...	23	614
Enghien-St. Gratien-Montmorency, Electric Tramway of (E. Dieudonné)	26	781
Engines, Gas. (<i>See</i> Gas-Engines.)		
Equation of Telegraphists (Le Roux)	26	186
Equivalent of Heat, Mechanical, Electrical Determination of (J. Blondin)	22	625
—— (Muculescu)	22	154
Etching by the Aid of Electric Current	23	99
Exhibition, Swiss National, Electricity at (C. E. Guye)	26	93
Expansion (Magnetic) of Iron (A. Berget)	22	473
Exploring Needle for Magnetic Fields (Marcher)	21	531
Explosive Discharge in Air, Action of Röntgen Rays and Ultra- Violet Light on (Sella and Majorana)	26	193
——, Action of Röntgen Rays on Nature of (Sella and Majorana)	26	194
—— Distance, Action of the Röntgen Rays on Electrostatic Charges, and on the (Borgman and Gerchun)	25	341
—— of Electric Spark, Influence of Röntgen Rays on (Guggenheimer)	26	324
—— Potentials, Difference in the Action of Ultra-Violet Light on Static and Dynamic (H. Swyngedauw)	25	246
——, Static and Dynamic, Effect of the Condition of the Polar Surfaces of an Exciter on (Swyngedauw)	26	89
—— Properties of Acetylene (Berthelot and Vieille)	25	730

F.

Fabry and Perot. (<i>See</i> Perot.)		
Farman, D., Electric Disinfection by the Hermite Process	24	375
——, Notes on the Theory of Dynamo Machines	24	381
Faunce, C., Electro-Refining of Silver and other Metals	25	85
Feldmann, C., Light and Power in Glow Lamps	21	752
Felten and Guillaume Cables (1893)	23	461
Fergusson and Ceuter, Variation of Light in Glow Lamps with Current and E.M.F.	21	346
Ferranti Phenomenon, Explanation of (J. Sahulka)	23	93

ABSTRACTS.

FER—FRO 101

	VOL.	PAGE
Ferrares Process of Magnetic Separation of Iron from Zinc Ore ...	24	215
Ferraris, G., Report on a Treatise of L. Lombardi: "Polarisation Phenomena in a Homogeneous Electrostatic Field" ...	25	457
Féry, C., Photometry of Projectors, Lighthouses, and Optical Telegraphs ...	23	236
Feussner, Dr., Alloys for Standard Resistances ...	21	466
Field, Alternating, The Magnetisation of Iron in an (Gerosa and Finzi) ...	21	533
——, Electric (Constant), Rotations in (G. Quincke) ...	26	328
——, Magnetic. (See Magnetic Field.)		
—— (Rotary-) Machines, Theory of (P. Boucherot) ...	23	238
——, Rotating, An Attempt at a Simple Theory of Motors with (F. Géraudy) ...	21	45
Filaments, Incandescent Lamp, Researches on Materials useful in Manufacture of (P. Delahaye) ...	25	347
Films containing Metallic Powders, The Action of Electro-magnetic Radiations on (G. M. Minchin) ...	23	251
——, Mercury, Formation of, Electrically (Rollo Appleyard) ...	26	776
——, Metallic, Resistance of Thin (E. Branly) ...	25	337
Finzi and Gerosa, Magnetisation of Iron in an Alternating Field ...	21	533
—— Gerosa, and Mai, Hysteresis in Magnetic Metals ...	23	445
Fischer-Hinnen, T., Reaction of Armature Current on Magnetic Field Fittings, Installation, Siemens and Halskè's, complying with Regulations of Verband Deutscher Elektrotechniker (Hundhausen) ...	26	198
Fives-Lille Co., Electric Traction Apparatus of the (Paul Girault) ...	25	736
Fluorescence of Vitrified Materials under the Action of Röntgen Rays (Radiguet) ...	26	181
Fluorescent Substance, Emission of Röntgen Rays from Tube containing (Piltchikoff) ...	25	340
Fluid Currents, Generation of Electricity by (H. Usener) ...	25	457
Fontaine, Emile, Influence of Electrical Condition of a Liquid Surface on the Heat of Vaporisation of that Liquid... ..	26	189
Fonvielle, W. de, Measurements of Earth Currents at the St. Maur Observatory ...	22	474
Fournier, A., and A. Lala, Influence of Magnetism on Electro-motive Forces of Batteries in which Iron forms one of the Elements ...	25	741
Fouveau de Courmelles and G. Seguy, Experiments on a New Cathode Apparatus, producing x Rays, and consisting of several Bulbs fixed to the same Gas Circuit... ..	26	457
Franke, A., and A. Raps, On rendering Galvanometers of High Sensibility independent of External Magnetic Fields ...	26	459
Frankfort, Electric Central Station of ...	24	219
—— Exhibition, Boiler Tests made at (J. Reyval) ...	24	382
Frankfort-Lauffen Transmission (F. Uppenborn) ...	22	150
—— Transmission ...	23	616
Frequency, Best, for Alternate-Current Working (E. Kolben) ...	23	598
—— of Alternating or Pulsating Currents, Instruments for Direct Measurement of (A. Campbell) ...	25	724
Frey, von, Electrical Resistance of the Human Body ...	22	148
Fribourg, Accumulators of the Germano-Swiss Company of (C. E. Guye) ...	26	95
Friese, R. M., Hot-Wire Mirror Instrument ...	25	458
Fromm, O. and F. Mylius, Formation of Floating Metal Sheets by Electrolysis ...	23	606
Fromme, C., Experimental Researches in Magnetism ...	24	94
——, Magnetic Investigations ...	21	43,464

	VOL.	PAGE
Furnace, Electric, A New (H. Moissan)	22	36
—, —, Preparation of Manganese in (H. Moissan)	26	18
—, —, — Silicon in the (H. Moissan)	26	18
—, —, Reduction of Wolfram by Carbon in (E. Defacqz)	26	9
—, —, Regnoli, for the Manufacture of Carbide of Calcium	26	78
—, —, Small (F. Küster and F. Dolezalek)	26	78
—, —, Spectrum Analysis of Carbons of (H. Deslandres)	24	64
Fürstenfeld-Bruck Electricity Works, The	22	47
Fuses, Lead, Downes and Woodward System of	26	78
Fusible Wires for Protecting Telegraphic Apparatus	23	46
Fusion of Metallic Wires by Continuous Currents, or by the Discharge of a Battery (Maurain)... ..	25	24

G.

Galvanometer, Ballistic, Use of, when the Transient Current is not of Short Duration (P. Weiss)	25	330
—, D'Arsonval, High Resistances used in connection with the (F. J. Smith)	22	366
—, Deprez, Increasing the Sensibility of the (Classen)	25	603
—, Movablé-Coil, Compensation of Directive Forces, and Sensi- tiveness of the (A. Abraham)	25	592
—, Needle, New Method of Reading off Deflections of (Hastings) of Constant Sensitiveness, Compensated (G. Grassi)	26	330
—, very Sensitive (G. Weiss)	24	563
—, Vibration, Measurement of Coefficients of Induction by means of (G. Granquist)	26	330
Galvanometers of High Sensibility rendered independent of External Magnetic Fields (A. Raps and A. Franke)	26	459
Garbasso, The Manner in which a Condenser Discharges through Two Paths: Mechanical Illustration of the Phenomenon	26	783
Garnier, J., Effect of Electricity on the Carburation of Iron	22	630
—, Study of Chemical Reactions by means of Electricity... ..	23	339
Garrett and Lucas, A Detector for Spark in Hertz's Resonator	21	464
—, A Nickel Stress Telephone	26	776
Gascard, A., and A. Buguet, Action of x Rays on the Diamond	25	339
Gas Engines, Automatic Apparatus for Starting	23	347
—, in Lighting Stations, Employment of (J. Bourquin)	23	340
—, Lamps, Incandescent, and Small Arcs (C. Heim)	22	471
Gases, Absorption of Röntgen Radiation by (E. Rutherford)	26	460
—, Brush Discharges in (W. H. Harvey and F. Bird)	22	624
—, Electrification of, exposed to Röntgen Rays (E. Rutherford)... ..	26	460
—, Electrolytic Occlusion of, by Porous Bodies, (Cailletet and Colardeau)	24	105
—, Rarefied Electrostatic Rotation of (Ricardo Arno)	24	225
—, Lehmann's Researches on Electric Discharges in (Lamotte)... ..	25	89
—, Separation and Striation of Rarefied, by the Electric Dis- charge (E. C. C. Baly)	22	366
—, Transparence of, to x Rays (L. Benoist)	26	180

ABSTRACTS.

GEB—GRA 103

	VOL.	PAGE
Gebaur-Knoeffler System of Electric Bleaching	23	347
Geissler Tube, Resemblance between Emission of Light in After-Glow of, and Commencement of Incandescence in Solid Bodies (C. Kirn)	23	783
Geitel, H., and J. Elster, Electro-optic Experiments	25	260
———, Experiments on Light and Electricity	23	786
———, Supposed Dispersion of Positive Electricity by Light...	25	256
Gelterkindan-Sessach Street Railway (Dr. Densler)	21	42
General Electric Co. of Berlin; Single- and Multiphase Alternators of, designed by V. Dolivo-Dobrowolski	24	379
Generating Plant of the " Société d'Éclairage et de Force " (F. Guilbert)	26	187
Generator for the Manufacture of Aluminium (C. E. Guye)	26	93
———, Thermo-electric (G. Meyer)	25	329
Geneva-Chevres, Transmission of Power (C. E. Guye)... ..	25	252
Geneva, Electric Tramways of (T. Tomasina)	24	225
Genoa, Electric Tramways of (Respighi)... ..	23	449
———, Electrical Transmission of Power to	21	534
——— Power Station, The (J. P. Anney)	22	272
George, H., The Comparative Output of the Direct, Alternating, and Polyphase Armature	21	533
Georges, Comparison between Monophase and Polyphase Currents ...	24	559
———, Comparative Cost of Monophase and Polyphase Alternating- Current Systems	24	561
Géorgiewsky and Egoroff. (<i>See</i> Egoroff.)		
Géraldy, F., An Attempt at a Simple Theory of Motors with Rotating Field	21	45
———, Long-Distance Telephony... ..	22	367
Gerard, Eric, and G. Henrard, Notes on Polyphase Currents... ..	25	596
Gerchun, A., and J. J. Borgman, Action of Röntgen Rays on Electro- static Charges, and on the Explosive Distance	25	341
Germain, Dry Cell with Cellulose Filling	22	471
Gerosa and Finzi, Magnetisation of Iron in an Alternating Field ...	21	533
———, and Mai, Hysteresis in Magnetic Metals	23	445
Gesundbrunnen-Pankow Electric Tramway	25	99
Girault, Paul, Electric Traction Apparatus of the Fives-Lille Co. ...	25	736
Glass and Aluminium, Adhesion between (Ch. Margot)	24	564
———, Electric Surface Conductivity of, in Moist Air (A. Krum- menacker)	25	601
———, Optical Properties of a Cylinder of, rapidly rotating in a Magnetic Field (C. Duperray)	26	101
———, Specific Inductive Power of (F. Beaulard)	25	81
———, Joining Metal to	21	754
———, Specific Inductive Capacity of (F. Beaulard)	23	809
Globular Spark, New Experiments on the (A. Righi)	25	450, 587
Goldhammer, D. A., Notes on the Nature of the x Rays	25	599
Gordon-Winkelmann Method of Measuring Specific Inductive Capacity (E. Cohn)	21	534
Gossart and Chevallier, Mechanical Action produced by a Crookes Tube, analogous to the Photogenic Action discovered by Röntgen	25	338
Gourré de Villemontée, C., Electric Potential in a Conducting Liquid having a Uniform Motion	24	385
Gouy, Reflection of Light by a Long and Narrow Surface	26	645
Granquist, G., Measurement of Coefficients of Induction by means of the Vibration-Galvanometer	26	330

	VOL.	PAGE
Graphite, Transformation of the Diamond into, in the Crookes Tube (H. Moissan)	26	453
Grassi, G., Compensated Galvanometer of Constant Sensitiveness ...	21	532
Grassot Electricity Meter for Continuous Currents, The (A. Perren) ...	23	800
Gray, Professor A., The Coils of Absolute Electro-Dynamometers ...	21	355
Grotrian, O., Magnetisation of Iron Cylinders	23	793
Guggenheimer, Influence of Röntgen Rays on the Explosive Distance of the Electric Spark	26	324
Guilbert, F., New Alternator of the "Sectur des Champs Elysées" ...	26	91
——, New Generating Plant of the "Société d' Eclairage et de Force"	26	187
Guilleaume, C. E., The Temperature Coefficient of Mercury	22	271
——, Felten Cables (1893)	23	461
Gulcher and Pintsch Thermopile	21	41
Guthe, K. E., and L. J. Bangs, Electrical Conductivity of Concentrated Sulphuric Acid	25	603
Gutta-Percha, American (L. Morisse)	23	108
Guye, C. E., Coefficient of Self-Induction of Wires, Parallel and Equi- Distant, and of which the Sections are laid round a Cir- cumference	23	807
——, Electric Transmission of Power, Chevres-Geneva	25	252
——, Travelling Crane	26	94
——, Electricity at the Swiss National Exhibition	26	93, 94
——, Generator for the Manufacture of Aluminium	26	93
——, New Accumulators of the Germano-Swiss Company of Fribourg	26	95
——, New Electric Brake Regulator	26	94
——, Variations of Temperature of a Conductor carrying Alternat- ing Currents	26	450

H.

Haas, R., Specific Conductivity and Temperature Coefficient of Copper-Zinc Alloys	23	791
Haga, Damper for a Quadrant Electrometer Needle	26	103
Hall Phenomenon (E. Van Aubel)	24	638
——, Axial Nature of Magnetic Lines of Force deduced from the Presence of the (F. Kolacek)	25	93
——, in Liquids (H. Bagard)	25, 240	97
Halogens, Behaviour of, relatively to Röntgen Rays (E. Sehrwald) ...	26	199
——, Electrolytic Determination of the (G. Vortmann)	25	458
Hamburg, Electric Traction in	25	94
Hanover Central Station (F. Uppenborn)	22	363
Harbour-Construction (Bilbao), Electricity in	23	240
Hartmann & Braun, Hot-Wire Voltmeter by (Anton Asch)	22	365
——, Motor Meters (T. Bruger)	25	102
Harvey, W. H., and F. Bird, Notes on Brush Discharges in Gases ...	22	624
Hastings, New Method of Reading off Deflections of Galvanometer Needle	26	330

	VOL.	PAGE
Heat Generated in Iron in Alternating Magnetic Fields by reason of Hysteresis (F. A. Weihe)	26	779
Heat, Mechanical Equivalent of (Muculescu)	22	154
———, Electrical Determination (J. Blondin)... ..	22	625
———, Specific, Relation in Batteries between E.M.F. and (Ascoli)... ..	21	468
Heating of Bare Wires (Cardani)	21	754
———, Effect of Local, on Permanent Magnets (C. Decharme)	21	348
Heen, P. de, Existence of Anode Rays analogous to the Cathode Rays of Lenard and of Crookes	26	444
———, Experiment showing that the x Rays emanate from the Anode	25	340
———, Photography of Electric Radiations of the Sun and of its Atmosphere	26	444
Heerwagen, F., New Method of Measuring the Specific Inductive Capacity of Liquids	22	265
Heilbronn-Lauffen Works (Meissner)	21	530
———, Transmission	22	262
Heim, C., Small Arcs and Incandescent Gas Lamps	22	471
Henderson, J. B., Effects of Magnetic Fields on Electric Conductivity of Bismuth	24	92
———, and W. Stroud, Measuring Electrolytic Conductivity by means of Continuous Currents	26	195
Hennig, R., Permeability of Oxygen	23	91
Henrard, G., and E. Gerard, Notes on Polyphase Currents	25	596
Henry, C., Increase in Photographic Power of Röntgen Rays by Use of Phosphorescent Sulphate of Zinc	25	335
———, New Process of Electrification	26	317
Herholz, G., Earth-Plates for Lightning Conductors	22	151
Hermite Process, Electric Disinfection by (D. Farman)	24	375
Hertz Exciter, Working of (Swyngedauw)	26	449
——— Oscillations, A Lecture Experiment with (L. Arons)	21	469
——— Spark Effect made Apparent to an Audience (L. Zehnder)	22	148
———, H., Passage of Radiation from the Cathode through Metallic Films (H. Hertz)	21	345
Hertzian Currents, Magnetisation produced by (Birkeland)	23	803
Hess, A., Electric Tramway from Bordeaux-Bouscat to Vigeau	23	341
———, Methods and Apparatus for Measuring Difference of Phase between Two Sinusoidal Currents	23	450
———, Part played by Capacity in Alternating-Current Circuits	23	103
Heydweiller, A., Determination of High Potentials	22	266
———, The Villari Critical Point in Nickel	23	789
———, and F. Kohlrausch, Pure Water	23	786
Hide Diaphragms, Electric Endosmose of Tannic Acid Solutions through (F. Roever)	25	326
Himstedt, F., Absolute Measurement of Resistance	24	553
———, Experiments with Tesla Currents	23	787
Hoffmann, W., Effects of the Electric Field on a Glow Lamp	26	462
Hoho, P., Means of Protection against Lightning	23	342
———, Use of Two or More Motors on Electric Cars or Locomotives	24	560
Holborn, L., Magnetisation of Steel and Iron by Small Magnetic Forces	26	777
Holland, R. J., Alteration of Conductivity of a Solution by Addition of Small Quantities of a Non-Conductor	23	94
Hollard, A., Electrolytic Analysis of Commercial Copper	26	85

	VOL.	PAGE
Hot-Wire Mirror Instrument (R. M. Friesse)	25	458
——, Voltmeter by Hartmann & Braun (Anton Asch)	22	365
Houllevigue, L., Experimental Study of Electrolytic Iron	26	648
——, The Theories of Residual Electricity	26	648
Human Body, Electrical Resistance of the (von Frey)	22	148
——, New Method of Electrifying (A. D'Arsonval)	24	563
Hundhausen, Siemens & Halske's New System of Installation Fittings and Safety Devices complying with the Regulations of the Verband Deutscher Elektrotechniker	26	198
Hurmuzescu, D., Electro-motive Force of Magnetisation	24	111, 567
——, New Determination of the Ratio v between Electro-static and Electro-magnetic Units	25	89
—— and Benoist, Action of x Rays on Electrified Bodies	25	591
——, Discharge of Bodies by x Rays	26	331
Hutin-Leblanc Electric Tramway	25	87
Hydrochloric Acid, Electrolysis of, without a Membrane (F. Oettel)...	25	259
Hysteresis attending the Change of Length by Magnetisation in Nickel and Iron (H. Nagaoka)	23	246
——, Effect of Temperature on (W. Kunz)	21	532
——, Heat Generated in Iron in Alternating Magnetic Fields by reason of (F. A. Weihe)	26	779
—— in Magnetic Metals (Gerosa, Finzi and Mai)	23	445
——, Law of, and Theory of Inductive Resistance in Closed Iron Circuits (C. P. Steinmetz)	25	604
——, Law of Magnetic, and Allied Phenomena (C. P. Steinmetz)...	22	153
——, Loss of Energy by, in Dynamo Armatures (M. Corsepius) ...	22	152
——, Magnetic, of Iron and Nickel, Dependence of, on their Temperature (W. Kunz)	23	338
——, ——, Relation of, to Temperature (W. Kunz)	23	600
——, ——, Steinmetz Coefficients of (Ebeling and Schmidt) ...	26	653
——, Rotations produced by Electrostatic, &c. (R. Arno)	22	269

I.

Ice, Dielectric Power of (R. Blondlot)	24	98
——, —— (A Pérot)	24	99
——, Propagation of Electro-magnetic Waves in (R. Blondlot) ...	24	98
Idiostatic Electrometer, Righi	24	385
Ihle, R., Formation of Ammonia in Electrolysis of Nitric Acid ...	26	104
Illuminating Power of Electric Arc: Pressure and Current Curves of various Types of Alternator, and their Influence on (G. Rössler and W. Wedding)	23	787
Imbert, A., and H. Bertin-Sans, Diffusion of Röntgen Rays	25	453
Incandescence in Solid Bodies, Resemblance between Commencement of, and Emission of Light in After-Glow of Geissler Tube (C. Kirn)	23	783
Incandescent Bodies, Discharging of Electrified Bodies in Gases by (Ed. Branly)	25	735
——, ——, The Radiation of (J. Violle)	21	743

ABSTRACTS.

INC—IRO 107

	VOL.	PAGE
Incandescent Lamp Bulbs, Deposit of Carbon Particles in Interior of (N. Popow)	26	183
— — — — —, The Carbon Deposit in (E. L. Nichols) ...	22	364
— — — — —, Effects of the Electric Field on a (Willibald Hoffmann)	26	462
— — — — — Filaments, Researches on Materials useful in the Manufacture of (P. Delahaye)	25	347
— — — — — Lamps, Comparison of Vacua of (C. Boccali)	21	532
— — — — —, Life of (D. Dujon)	21	346
— — — — —, Light and Power in (C. Feldmann)	21	752
— — — — —, Measuring the Temperature of (P. Janet)	25	735
— — — — —, Variation of Light in, with Current and E.M.F. (Fergusson and Ceuter)	21	346
Indicator, Phase, for Synchronising, Alcock's	21	41
Indirect Electrolysis (E. Andreoli)	25	251
Induced Currents, Influence of, on the Orientation of Live Bacteria (L. Lortet)	25	587
Induction Balance, A New Form of (Wien)	22	620
— — — — — Coefficients of, Influence of Electrostatic Capacity of Coils on Measurement of, by Wheatstone Bridge (J. Cauro) ...	24	378
— — — — —, Coefficients of, Measurement by Vibration Galvanometer (G. Granquist)	26	330
— — — — — of Telephone Wires, Overcoming (Dolivo-Dobrowolski) ...	21	537
— — — — — Oscillograph, Abraham-Carpentier (H. Abraham)	26	451
— — — — — Protection of Telephone Lines against (K. Strecker)	21	466
— — — — — Self-. (See Self-Induction.)		
— — — — —, Unipolar (E. Lecher)	23	796
Inductive Capacity of Dielectrics, Influence of Temperature on (R. Appleyard)	25	723
— — — — —, Specific. (See Specific Inductive Capacity.)		
— — — — — Resistance in Closed Iron Circuits, Law of Hysteresis and the Theory of (C. P. Steinmetz)	25	604
— — — — — (Specific-) Power of Glass (F. Beaulard)	25	81
Industrial Electro-Chemistry	23	339
Influence Machine, New (L. Lebiez)	25	259
— — — — —, Output of (H. Abraham)	21	750
— — — — —, Multiple-Plate, Electric Condenser Oscillations produced with, and their Use in Tesla Experiments (Topler) ...	25	258
Installation Fittings and Safety Devices, Siemens & Halske's New System of (Hundhausen)	26	198
Instruments for Direct Measurement of Frequency of Alternating or Pulsating Currents (A. Campbell)	25	724
— — — — —, Measuring, Protection of, against Terrestrial Vibrations (W. N. Julius)	25	96
Insulating Substances, Solid and Liquid, Duration of the Electric Shadow in (G. Quincke)	25	244
Insulator, Variation of Dielectric Constants of, by the Effect of Tension (O. M. Corbino)	26	333
Insulators, Rotating, Damping Action of Magnetic Field on (W. Duane and W. Stewart)	26	778
Intermittent Currents, Physical, Physiological, and Therapeutic Effects of (Boisseau du Rocher)	26	151
Iron and Carbon, Transformation of, with respect to Tempering (Georges Charpy)	23	807

	VOL.	PAGE
Iron and Steel, Temperatures of Transformation of (G. Charpy) ...	24	96
———, Cylinders, Magnetisation of (O. Grotrian) ...	23	793
———, Dependence of Magnetic Hysteresis, Permeability, and Electrical Conductivity of, on Temperature (W. Kunz) ...	23	338
———, Effect of Electricity on the Carburation of (J. Garnier) ...	22	630
———, Electrode Batteries, Influence of Magnetism on the Electromotive Forces (A. Lala and A. Fournier) ...	25	741
———, Electrolytic, Experimental Study of (L. Houlléviqne) ...	26	648
———, Heat Generated in, in Alternating Magnetic Fields by reason of Hysteresis (F. A. Weihe) ...	26	779
———, Magnetic Expansion of (A. Berget) ...	22	473
———, Properties of Recent Kinds of (Ebeling and Schmidt) ...	26	653
———, Qualities of, Apparatus for the Determination of the, in Absolute Measurement (A. Koepsel) ...	23	604
———, Separation of, from Zinc Ore—Ferrares Process ...	24	215
———, Magnetisation in, Hysteresis attending the Change of Length by (H. Nagaoka) ...	23	246
———, Magnetisation of, by Small Magnetic Forces (L. Holborn) ...	26	777
———, in an Alternating Field (Gerosa and Finzi) ...	21	533
———, Soft, Elongation produced in, by Magnetism (S. J. Lochner) ...	23	91
Irons and Steels, Resistance of (F. Osmond) ...	21	751
Irradiation Colours in Luminous Excitations of Short Duration (Aug. Charpentier) ...	26	318
Isar Works, The (Oscar von Millar) ...	25	96

J.

Jacques' Method of Obtaining Electricity direct from Carbon ...	25	586
Jacquin, C., Distribution of Electrical Energy by Polyphase and Continuous Currents at Bockenheim ...	22	628
———, Electric Tramway from "La Place de la Republique" to Romainville (Paris) ...	25	594
———, Transmission of Motive Power by Polyphase Currents to the Jura-Simplon Workshops ...	23	455
Jaeger, W., Note on the Purification of Mercury ...	22	268
——— and Wachsmuth, The Cadmium Standard Cell ...	25	726
———, Weston Standard Cadmium Cell ...	24	96
Janet, P., Electro-chemical Method for Automatically Recording Periodic Currents ...	23	807
———, Electro-chemical Method of Observing Alternate Currents ...	23	458
———, Measuring the Temperature of Incandescent Lamps ...	25	735
Jones, E. Taylor, Electro-magnetic Stress ...	24	555
Joubin, P., Dimensions of Electric and Magnetic Quantities ...	26	321
Jovitschitsch and Losanitsch, Chemical Syntheses by means of the Silent Discharge ...	26	780
Julius, W. H., Protecting Measuring Instruments against Terrestrial Vibrations ...	25	96
Jüllig, M., A Phenomenon of Electro-magnetic Rotation ...	22	623
Jura-Simplon Workshops, Transmission of Motive Power by Polyphase Currents to the (C. Jacquin) ...	23	455

K.

	VOL.	PAGE
Karrass and Strecker, Soldering Accumulator Electrodes	26	105
Kelvin, Lord, On a Piezo-electric Pile	23	92
Kennelly, A. E., Differential Wattmeter for Use with Alternate Currents	22	367
Kiel Canal, Electric Lighting of (J. Reyval)	24	642
Kirn, C., Resemblance between Emission of Light in After-Glow of Geissler Tube, and Commencement of Incandescence in Solid Bodies	23	783
Klein and Meyer, Depolarisation of Platinum and Mercury Electrodes	26	330
Kleiner, A., Condensers	26	651
——, Position of the Electricity in a Condenser	23	793
—— and Seiler, Process of Charging Condensers	26	651
Klemencic, J., Absorption and Distribution of Electric Oscillations in Wire Networks	23	96
Kling, W., Electric Lighting of Central Railway Station of Munich ...	25	100
Knœffler & Gebaur System of Electric Bleaching	23	347
Knott, C. G., Magnetic Elongation, and Magnetic-Twist Cycles ...	23	247
Koch, K. R., Conductivity of Dielectric Liquids	23	97
Koepsel, A., Apparatus for Determination of Magnetic Qualities of Iron in Absolute Measurement	23	604
Kohlrausch, F., Determination of Electrical Resistance by means of Alternating Currents	22	621
——, Platinised Electrodes and Measurement of Resistance ...	26	329
——, Some Forms of Electrodes for the Determination of the Resistance of Electrolytes	23	445
—— and A. Heydweiller, Pure Water	23	786
Kolacek, F., Axial Nature of Magnetic Lines of Force deduced from the Presence of the Hall Phenomenon	25	93
Kolben, E., Best Frequency for Alternate-Current Working	23	598
——, Some Characteristics of Synchronous Motors	25	101
Königsberg Electricity Works (F. Uppenborn)	22	625
Korda, Désiré, Combined Use of Accumulators and of Trolley ...	26	325
——, Thermo-chemical Carbon Cell	24	387
——, Transformer for Converting Monophase into Triphase Currents	23	799
Kowalski, J. de, The Mixing of Liquids	23	796
Krämer, J., Calculations on Maximum Speed for an Electric Railway	21	755
Krieg, Obtaining Tungsten by Electricity	23	236
Krummenacker, Absolute Measurements of Electric Surface Con- ductivity of Glass with different Degrees of Moistness of the Surrounding Air	25	601
"Kruppin," a New Resistance Material (G. Dettmar)	23	95
Kugel, M., Local Action in Secondary Battery Plates	21	349
Kunz, W., Dependence of Magnetic Hysteresis, Permeability, and Electrical Conductivity of Iron and Nickel on their Temperature	23	338
——, Effect of Temperature on Hysteresis	21	532
——, Relation of Magnetic Hysteresis to Temperature	23	600
Kurlbaum and Lummer, Bolometric Researches on a Unit of Light ...	23	794
Küster and Dolezalek, A Small Electric Furnace	23	780

L.

	VOL.	PAGE
Labesse and Bleunard, Passage of Röntgen Rays through Liquids ...	25	453
Lafay, A., Electrified Röntgen Rays	25	593
Laffargue, J., Distribution of Electrical Energy in Paris	24	651
Lagarde, Electrical Resistance of Pure Copper Wire	22	635
Lahmeyer Synchroniser	23	340
Lala and Fournier, Influence of Magnetism on Electro-motive Forces of Batteries in which Iron forms one of the Elements	25	741
Lamotte, Lehmann's Researches on Electric Discharges in Gases ...	25	89
Lamp, Electric, Miners' (Sussmann's)	26	454
—— Filaments, Incandescent, Researches on Materials useful in Manufacture of (P. Delahaye)	25	347
Lamps, Glow. (See Incandescent Lamps.)		
Lang, V. Von, Change produced by Electric Rays on the Contact Resistance of Two Conductors	25	255
Langer, H., Siemens & Halske Controlling Apparatus for Lifts ...	25	103
Lauffen- Frankfort Power Transmission	23	616
—— (F. Uppenborn)	22	150
—— Heilbronn Transmission, The	22	262
—— Works (Meissner)	21	530
Lead Accumulators, Influence of Rate of Discharge on Capacity of (L. Peukert)	26	652
—— Desilverised Electrolytically (D. Tommasi)	26	334
—— Fuses, Downes and Woodward System of	26	785
——, Porous, for Accumulators, The Formation by Electrolysis of ...	22	475
Lebedew, P., Mechanical Effects of Electrical Waves on Still Resona- tors	23	790
Lebiez, L., New Influence Machine	25	259
Le Blanc, Max, The Minimum E.M.F. necessary to produce Decom- position in Electrolytes	23	349
Leblanc and Hutin Electric Tramway	25	87
Le Bon, G., Electric Properties of Radiations emitted by Bodies under the Influence of Light	26	636
——, Nature of different Kinds of Radiations produced by Bodies under the Influence of Light	26	454
——, Properties of certain Radiations of the Spectrum	26	644
Le Bon's Experiments, Explanation of some of (H. Becquerel) ...	26	641
Le Cadet, G., Variation of the Electric Condition of High Regions of the Atmosphere during Fine Weather	26	455
Lecarme, J. and L., Apparatus for Registering the Velocity of Pendulum Movements... ..	26	319
Le Chatelier, H., Combustion of Acetylene	25	250
Lecher, E., Unipolar Induction	23, 796	553
Lefevre, J., Researches on Dielectrics	23	105
Lehmann's Researches on Electric Discharges in Gases (Lamotte)	25	89
Lemoine, A., Measurement of very High Potentials	24	641
Lemoine, J. and H. Abraham, Measurement of very High Potential Differences	25	329
Lenard, P., Cathode Rays in Gases at Atmospheric Pressure and in High Vacua	23	335
——, Magnetic Deflection of Cathode Rays	23	605

	VOL.	PAGE
Length, Change of, by Magnetisation in Nickel and Iron, Hysteresis attending the (H. Nagaoka)	23	246
— of a Bar of Bismuth, Influence of Magnetism on (E. van Aubel)	21	751
Le Roux, The Equation of Telegraphists... ..	26	186
Leyst, E., The Magnetism of Planets	25	239
Life of Glow Lamps (D. Dujon)	21	346
Lifting Gear, Electrical, for Locomotive Works... ..	25	461
Lifts, Controlling Apparatus for, Siemens & Halske's (H. Langer) ...	25	103
Light and Electricity, Experiments on (J. Elster and H. Geitel) ...	23	786
— and Power in Glow Lamps (C. Feldmann)	21	752
—, Black (Perrigot)	26	637
—, Diffusion of (W. E. Sumpner)	22	268
—, Direct Measurement of Mean Spherical Intensities of Sources of (A. Blondel)	24	563
—, Electric Properties of Radiations emitted by Bodies under the Influence of (G. Le Bon)	26	636
—, Emitted, Influence of Magnetism on the Nature of (P. Zeeman) ...	26	332
—, Nature of different Kinds of Radiations produced by Bodies under the Influence of (G. Le Bon)	26	454
—, Polarised, from Magnetic Mirrors, Reflection of (J. A. Rosenqvist)	23	448
—, Reflection of, by a Long and Narrow Surface (Gouy)... ..	26	645
—, Supposed Dispersion of Positive Electricity by (J. Elster and H. Geitel)	25	256
—, Ultra-Violet, Action of, on Explosive Discharge in Air (Sella and Majorana)	26	193
—, —, Difference in Action of, on Static and Dynamic Explosive Potentials (H. Swyngedauw)	25	246
—, Unit of, Bolometric Researches on (Lummer and Kurlbaum) ...	23	794
—, Variation of, in Glow Lamps with Current and E.M.F. (Fergusson and Ceuter)	21	346
Lighthouses, Photometry of (C. Féry)	23	236
Lighting, Electric, by Polyphase Currents in Works (P. Boucherot) ...	24	215
—, —, of Central Railway Station of Munich (W. Klug)	25	100
—, —, of Dieppe	23	102
—, —, of the Kiel Canal (J. Reyval)	24	642
—, —, of Trains (J. Dery and L. Weissenbruch)	23	235
—, —, —, on the Chemin de Fer du Nord (E. Sartiaux) ...	26	782
— Stations, Employment of Gas Engines in (J. Bourquin)	23	340
Lightning Arrester, Doane	23	241
— Conductors, Earth-Plates for (G. Herholz)	22	151
— Discharges, Oscillations of (J. Trowbridge)	23	93
— Flash in an Electric Central Station, A (P. Robert)	23	616
—, Protection against (P. Hoho)	23	342
Limb, C., Direct Method for Absolute Measurement of Electro-motive Forces	23	611
Limits of Electrolysis (Berthelot)	23	349
Lindeck, E.M.F. of the Clark Cell... ..	21	465
Lines, High-Pressure, Cost of (P. Boucherot)	23	99
— of Force, Magnetic: Axial Nature of, deduced from the presence of the Hall Phenomenon (F. Kolacek)	25	93
—, Overhead, Note on the Capacity of (E. Brylinski)	21	530

	VOL.	PAGE	
Lines, Telephone, Protection of, against Induction (K. Strecker) ...	21	466	
Lippmann, G., Method of Comparing, by means of the Electric Spark, the Duration of Oscillation of Two Pendulums regulated approximately to the same Period	26	180	
Liquid, Conducting, having a Uniform Motion, Electric Potential in a (C. Gourré de Villemontée)	24	385	
——— Surface, Influence of the Electrical Condition of, on the Heat of Vaporisation of that Liquid (Emile Fontaine)	26	189	
Liquids, Electrification produced by Vaporisation of various Conducting and very Fluid (P. Pettinelli)	25	458	
———, Dielectric, Measuring the Conductivity of (K. R. Koch) ...	23	97	
———, Mixing of (J. D. Kowalski)	23	796	
———, Passage of Röntgen Rays through (Bleunard and Labesse) ...	25	453	
———, Specific Inductive Capacity of, New Method of Measuring the (F. Heerwagen)	22	265	
———, The Hall Phenomenon in (H. Bagard)	25, 240	26	97
Liveing Carbon Electrode	23	339	
Loadstone, Magnetic Properties of (Anton Abt.)	21	345	
Löb, W., Use of Porous Carbon Cylinders in Electrolytic Reseaches	26	107	
Local Action in Secondary Battery Plates (Kugel)	21	349	
Lochner, S. J., Elongation produced in Soft Iron by Magnetism ...	23	91	
Locomotive Works, Electrical Lifting Gear for	25	461	
Locomotives, Electric, Use of Two or more Motors on (P. Hoho) ...	24	560	
Lodge, Oliver, Sudden Acquisition of Conducting Power by a Series of Discrete Metallic Particles	23	252	
Lohmann, A., Slavianoff Electric Casting Process	24	557	
Lohnstein, R., Passage of Weak Currents through Electrolytes ...	21	753	
Lohr, E., The Middle Conductor in the Three-Wire System	25	97	
Lombardi, L., Absolute Measurement of Capacity of Condensers by means of Alternate Currents	26	102	
———, Report on a Treatise of: "Polarisation Phenomena in a "Homogeneous Electrostatic Field" (G. Ferraris)	25	457	
Long-Distance Telephony (F. Gerdaldy)	22	367	
Lortet, L., Influence of Induced Currents on Orientation of Live Bacteria	25	587	
Losanitsch and Jovitschitsch, Chemical Syntheses by means of the Silent Discharge	26	780	
Losses, Light-Load, Reduction of, in Alternate-Current Systems of Supply (Cowan and Still)	25	563	
Lucas, F., Direct to Alternating Transformer	22	269	
———, W. and T. A. Garrett, A Detector for Spark in Hertz's Resonator	21	464	
———, A Nickel Stress Telephone	26	776	
Lugano, Three-Phase Tramway of	25	344	
Luminous Excitations of Short Duration, Irradiation Colours in (Aug. Charpentier)	26	318	
——— Rays and Röntgen Rays, Comparison of Absorption of, by Crystallised Media (G. Agafonoff)	26	458	
Lummer and Kurlbaum, Bolometric Researches on a Unit of Light	23	794	
Lyons, Electric Tramway (Claret-Vuilleumier System), (Vuilleumier)	24	218	

M.

	VOL.	PAGE
Mack, K., Double Refraction of Electric Radiation	24	551
Magnesium, Electrolytic Preparation of (F. Oettel)	25	458
Magnet Floating on Mercury carrying a Current, Movements of a (C. Decharme)	22	270
Magnetic. (<i>See also</i> Electro-Magnetic.)		
— Circuit, Descartes on the	21	754
— —, Remarks on the (C. P. Steinmetz)	21	537
— Deflection of Cathode Rays (P. Lenard)... ..	23	605
— Dielectric (Birkeland)	23	803
— Elements, Absolute Value of the, up to January 1st, 1897 (T. H. Moureaux)	26	186
— Elongation, and Magnetic-Twist Cycles (C. G. Knott)... ..	23	247
— Expansion of Iron, On the (A. Berget)	22	473
— Field, Alternating Rotary, and its Application (R. Malagoli)	24	374
— —, Damping Action of, on Rotating Insulators (W. Duane and W. Stewart)	26	778
— —, Optical Properties of a Cylinder of Glass rapidly rotating in (C. Duperray)	26	101
— —, Partial Polarisation of, Luminous Radiations in (Egoroff and Géorgiewsky)	26	640
— —, Photographic Method of Representing a (C. Thwing)... ..	22	475
— —, Reaction of the Armature Current on the (T. Fischer- Hinnen)	22	264
— —, Vibrations of a Tuning Fork in (Maurain)	24	645
— Fields, Alternating, Heat Generated in Iron by reason of Hysteresis in (F. A. Weihe)	26	779
— —, Effects of, on Electric Conductivity of Bismuth (J. B. Henderson)	24	92
— —, Exploring Needle for (Marcher)	21	531
— —, Measure of (E. Van Aubel)	24	638
— —, of High Frequency, A Measure of (A. D'Arsonval)	24	563
— —, Rotary, Increasing the Number of Exciting Phases for the Production of (Dr. Behn-Eschenburg)	22	250
— Forces, Influence of, on Cathode Rays (K. Birkeland)... ..	26	104
— Hysteresis, Law of, and Allied Phenomena (C. P. Steinmetz)	22	153
— — of Iron and Nickel, Dependence of, on their Tempera- ture (W. Kunz)	23	338
— —, Relation of, to Temperature (W. Kunz)	23	600
— —, The Steinmetz Coefficients of (Ebeling and Schmidt)	26	653
— Investigations (C. Fromme)	21	43, 464
— Lines of Force, Axial Nature of, deduced from the Presence of the Hall Phenomenon (F. Kolacek)	25	93
— — —, Explanation of Repulsion of Elihu Thomson's Ring by Reaction of (W. de Nikolaieff)	25	80
— Metals, Hysteresis in (Gerosa, Finzi, and Mai)... ..	23	445
— Mirrors, Reflection of Polarised Light from (J. A. Rosenqvist)	23	448
— Properties of Bodies at different Temperatures (P. Curie)	22	156
— — of Magnetite (Loadstone) (Anton Abt)	21	345
— — of Metals, Influence of Tensional and Compressive Stresses on (G. S. Meyer)	25	726

	VOL	PAGE
Magnetic Properties of Pyrrhotine (A. Abt)	25	26
——— of Recent Kinds of Iron, and the Steinmetz Coefficients of Magnetic Hysteresis (Ebeling and Schmidt)	26	65
——— Qualities of Iron, Apparatus for the Determination of in Absolute Measurement (A. Koepsel)	23	60
——— Quantities, Dimensions of (P. Joubin)	26	32
——— Rotary Polarisation, Becquerel's Formula (E. van Aubel) ...	26	9
——— Separation of Iron from Zinc Ore—Ferrares Process	24	21
——— Twist Cycles, Magnetic Elongation and (C. G. Knott)	23	24
Magnetisation by very Small Forces (P. Culmann)	22	62
———, Electro-motive Force of (D. Hurmuzescu)	24	111, 56
———, Energy dissipated by (Maurain)	25	32
——— in Nickel and Iron, Hysteresis attending the Change of Length by (H. Nagaoka)	23	24, 6
——— of Iron Cylinders (O. Grotrian)	23	79, 3
——— of Iron in an Alternating Field (Gerosa and Finzi)	21	53, 3
——— of Nickel under Mechanical Strain (H. Banti)	22	149
——— of Steel and Iron by Small Magnetic Forces (L. Holborn) ...	26	777
——— produced by Hertzian Currents (Birkeland)	23	803
Magnetising Steel, Experiments on various Methods of (C. Decharme)	21	348
Magnetism, Elongation produced in Soft Iron by (S. J. Lochner) ...	23	91
———, Experimental Researches in (C. Fromme)	24	94
———, Influence of, on Electro-motive Forces of Batteries in which Iron forms one of the Elements (A. Lala and A. Fournier) ...	25	741
———, ———, on Length of a Bar of Bismuth (E. van Aubel) ...	21	751
———, ———, on Nature of Light emitted by a Substance (P. Zeeman)	26	332
———, Mirrors of (S. P. Thompson and Milles Walker)	24	552
——— of Planets (E. Leyst)	25	239
———, Permanent, of Nickel and Steel (A. Abt)	21	753
———, Some Phenomena in Permanent (P. Bachmetjew)	21	42
———, Wave Propagation of (J. Trowbridge)	21	467
Magnetite (Loadstone), Magnetic Properties of (Anton Abt)	21	345
Magnets, Permanent, The Effect of Local Heating on (C. Decharme)	21	348
———, Influence of Low Temperatures on Attractive Power of (R. Pictet)	24	381
Magneto-optical Phenomena (P. Drude)	22	148
Mai, Gerosa, and Finzi, Hysteresis in Magnetic Metals	23	445
Majorana and Sella. (<i>See</i> Sella).		
Malagoli, R., Alternating Rotary Magnetic Field, and its Application	24	374
———, Difference of Phase produced by a Polariser carrying an Alternating Current	26	782
Maltezos, C., Phosphorescent Anti-Anode System, and the Anode Rays	26	645
———, Cathode Rays and some Phenomena in Vacuum Tubes ...	26	643
Manganese, Preparation of, in the Electric Furnace (H. Moissan) ...	26	185
Marcher, Exploring Needle for Magnetic Fields... ..	21	531
———, New Dynamo Machine by... ..	23	618
Marcillac, P., Electric War Signals	24	384
———, Tivoli-Rome Transmission of Electrical Energy	23	106
Maréchal, C., Brake for Measuring Efficiency of Motors of Small Power	26	449
———, Electro-chemical Actinometer	24	107

	VOL.	PAGE
Margot, Ch., Curious Phenomena of Adhesion between Glass and Aluminium and a few other Metals	24	564
———, Electro-Plating of Aluminium with Copper	25, 603	26 196
Mascart, Resistance of Conductors to Alternating Currents	25	244
Mathes and Umbreit, Cupron Cell... ..	26	108
Maurain, The Energy dissipated by Magnetisation	25	334
———, Fusion of Metallic Wires by Continuous Currents, or by the Discharge of a Battery... ..	25	240
———, Vibrations of a Tuning Fork in a Magnetic Field	24	645
Measurement, Absolute, Apparatus for the Determination of the Magnetic Qualities of Iron in (A. Koepsel)	23	604
———, ———, of Electro-motive Forces, Direct Method for (C. Limb)	23	611
———, ———, of Resistance (F. Himstedt)	24	553
———, of very High Potential Differences (H. Abraham and J. Lemoine)	25	329
———, of very High Potentials (A. Lemoine)	24	641
Measuring Electrolytic Conductivity by means of Continuous Currents (W. Stroud and J. B. Henderson)... ..	26	195
——— Instruments for Alternating Currents, Method of Calibrating, used by Allgemeine Electricitäts-Gesellschaft (K. Wilkens)	26	334
———, ———, Protecting, against, Terrestrial Vibrations (W. N. Julius)	25	96
——— the Efficiency of Small Motors, Brake for (C. Maréchal)	26	449
Mechanical Effects of Electrical Waves on Still Resonators (P. Lebedew)... ..	23	790
——— Equivalent of Heat (Muculescu)	22	154
———, ———, Determination of, by Electrical Methods (J. Blondin)	22	625
——— Strain, Magnetisation of Nickel under (H. Banti)	22	149
Meissner, Dr., the Lauffen-Heilbronn Works	21	530
Melting-Point, Electrical Resistance of Metals at (G. Vassura)	23	105
Membrane, Electrolysis of H Cl without a (F. Oettel)	25	259
Mène, M., Protection of Trains on Single Lines	23	450
Menier's Factory at Noisiel, Transmission of Power at (P. Boucherot)	23	619
Mercadier and Anizan Microphone, New (J. Anizan)	24	227
Mercury carrying a Current, Movements of a Magnet floating on (C. Decharme)	22	270
——— Electrodes, Depolarisation of (Meyer and Klein)	26	330
———, Polarisation Capacity of (E. Orlich)	26	105
——— Films, Formation of Electrically (Rollo Appleyard)	26	776
———, Purification of (W. Jaeger)	22	268
———, Temperature Coefficient of (C. E. Guillaume)	22	271
Meslans, Influence of the Chemical Nature of Bodies on their Transparency to Röntgen Rays	25	336
Metal Sheets, Formation of Floating, by Electrolysis (F. Mylius and O. Fromm)	23	606
———, Testing of for Flaws (de Place)	21	749
———, Joining, to Glass	21	754
Metallic Films, Passage of Radiation from the Cathode through (H. Hertz)	21	345
———, Thin, Resistance of (E. Branly)... ..	25	337
——— Particles, Sudden Acquisition of Conducting Power by a Series of Discrete (Oliver Lodge)	23	252

	VOL.	PAGE
Metallic Powders, Action of Electro-magnetic Radiations on Films containing (G. M. Minchin)	23	251
—— Wires, Fusion of, by Continuous Currents, or by the Discharge of a Battery (Maurin)	25	240
Metals, Adhesion to Glass (Ch. Margot)	24	564
——, Electrical Resistance at the Contact of Two (E. Branly)	24	639
——, Electrical Resistance of, at Melting Point (G. Vassura)	23	105
——, Magnetic Hysteresis in (Gerosa, Finzi, and Mai)	23	445
——, Thermo-electric and Magnetic Properties of, Influence of Tensional and Compressive Stresses on (G. S. Meyer)	25	726
Meter, Grassot, for Continuous Currents (A. Perrin)	23	800
Meters, Motor. (<i>See</i> Motor.)		
Meyer, G. S., Influence of Tensional and Compressive Stresses on the Thermo-electric and Magnetic Properties of the Metals	25	726
——, Thermo-electric Generator	25	329
——, and K. Klein, Depolarisation of Platinum and Mercury Electrodes	26	330
Mica Plates, Manufacture of	22	631
Microphone, Mercadier and Anizan, New (J. Anizan)	24	227
Millar, Oscar von, The Isar Works	25	96
Mills, Rolling, Electrically-Driven	25	460
Minchin, G. M., Action of Electro-magnetic Radiations on Films containing Metallic Powders	23	251
Miner's Lamp, Sussmann Electric	26	454
Mines of the Bleiberger Bergwerks-Union, Carinthia, Electric Transmission of Power in the	25	330
Mirror Instrument, Hot-Wire (R. M. Friese)	25	458
Mirrors, Magnetic, Reflection of Polarised Light from (J. A. Rosenqvist)	23	448
—— of Magnetism (S. P. Thompson and Miles Walker)	24	552
Mixing of Liquids (J. de Kowalski)	23	796
Moissan, H., Carbide of Uranium... ..	25	345
——, Impurities in Commercial Aluminium	23	797
——, New Electrical Furnace	22	366
——, Preparation of Manganese in the Electric Furnace	26	185
——, Preparation of Silicon in the Electric Furnace	26	185
——, Sodium in Electrolytic Aluminium	25	87
——, Transformation of the Diamond into Graphite in the Crookes Tube	26	453
——, Vaporisation of Carbon	24	104
Monocyclic System of Distribution, The Steinmetz (E. Boistel)	24	649
Monophase and Polyphase Currents, Comparison between (G. Georges)	24	559
—— Systems, Comparative Cost of (H. Georges)	24	561
Mont Salève, Electric Rack-Railway on	23	607
Morisot, Cell of High and Constant E.M.F.	24	643
Morisse, L., American Gutta-Percha	23	108
Moseley, Preparation of Zinc Electrodes for Galvanic Batteries	22	471
Motor, Alternate-Current, capable of Regulation (Dr. Behn-Eschenburg)	22	622
Motor Meters, with Special Reference to those of Messrs. Hartmann and Braun; Alternating-Current Motor Meters (T. Bruger)	25	102
Motors, Non-Synchronous, for Ordinary Alternate Currents (E. Arnold)	22	475

	VOL.	PAGE
Motors, Non-Synchronous, Single-Phase, Experiments on (A. Banti)	23	241
—— of Small Power, Brake for Measuring the Efficiency of (C. Maréchal)	26	449
—— on Electric Cars or Locomotives, Use of Two or more (P. Hoho)	24	560
——, Polyphase (C. P. Steinmetz)	23	249
——, ——, and Continuous-Current, Comparison between (Duez)	24	644
——, Synchronous Alternating-Current, Transmission of Power by (R. V. Picou)	24	377
——, —— and Non-Synchronous (P. Boucherot)	25	237
——, ——, Some Characteristics of (E. Kolben)	25	101
—— with Rotating Field, Attempt at a Simple Theory of (F. Géraldy)	21	45
Moureaux, T. H., Absolute Value of the Magnetic Elements up to January 1st, 1897	26	186
Mourello, J. R., Researches on Sulphide of Strontium, and a Method for obtaining it in very Phosphorescent Condition	26	641
——, The Phosphorescence of Sulphide of Strontium	26	642
Moutier, A., Buda-Pesth Central Station	26	182
——, —— Tramways	26	322
——, ——, Underground Conduit and Overhead Trolley Systems	26	326
Movable-Coil Galvanometer, Compensation of Directive Forces, and Sensitiveness of (A. Abraham)	25	592
Muculescu, Mechanical Equivalent of Heat	22	154
Müller, Hermann, Accumulator Sub-Stations in Electric Lighting ...	22	150
Multiple-Plate Influence Machines, Electric Condenser Oscillations produced with (Topler)	25	258
Multipolar Compared with 2-pole Dynamos (E. Schulz)	22	157
Multitubular Electric Accumulators (D. Tommasi)	22	367
Munich, Electric Lighting of Central Railway Station of (W. Klug)...	25	100
Murani, O., Influence of Vibration on the Electric Resistance of Metallic Wires	26	103
Mylius, F., and O. Fromm, Formation of Floating Metal Sheets by Electrolysis	23	606

N.

Nagaoka, H., Hysteresis attending the Change of Length by Magnetisation in Nickel and Iron	23	246
Nannes, G., Charging of Objects by means of x Rays	26	652
Needle (Exploring) for Magnetic Fields (Marcher)	21	531
Negreanu, D., New Method of Measuring the E.M.F. of Cells... ..	26	333
Networks, Wire, Absorption and Distribution of Electric Oscillations in (J. Klemencie)	23	96
Neustadt, L., Concentric Cable Phenomena in Alternate-Current Working	22	477
Nichols, E. L., Carbon Deposit in Glow-Lamp Bulbs	22	364

	VOL.	PAGE
Nickel, Dependence of Magnetic Hysteresis, Permeability and the Electrical Conductivity of, on Temperature (W. Kunz) ...	23	338
——, Magnetisation in, Hysteresis attending the Change of Length by (H. Nagaoka)	23	246
——, ——— of, under Mechanical Strain (H. Banti)	22	149
——, Permanent Magnetism of (A. Abt)	21	753
—— Stress Telephone (T. A. Garrett and W. Lucas)	26	776
——, Villari Critical Point in (A. Heydweiller)	23	789
Nikolaieva, W. de, Explanation of Repulsion of Elihu Thomson's Ring by Reaction of Magnetic Lines of Force: Effects of Self-Induction	25	80
Nitric Acid, Formation of Ammonia in Electrolysis of (R. Ihle) ...	26	104
Nitrogen, Atmospheric, Demonstrating Presence of Argon in (Cuntz) ...	24	569
——, Electric Absorption of, by Carbon Compounds (Berthelot) ...	26	448
Nizzola, A., Electrical Transmission by Polyphase Currents at Romagnano	26	647
Nodon, A., Experiments on the Röntgen Rays	25	338
Noisiel, Transmission of Power at (P. Boucherot)	23	619
Nourrisson, C., Minimum Electro-motive Force necessary to produce Electrolysis of Dissolved Alkaline Salts	23	245

O.

Oberbeck, A., The Resistance of Allotropic Silver	21	753
Observatory (St. Maur), Measurements of Earth Currents at the (W. de Fonvielle)	22	474
Occlusion of Electrolytic Gases by Porous Bodies (Cailliet and Colardeau)	24	105
Oettel, F., Electrolytic Preparation of Magnesium	25	458
——, Electrolysis of H Cl without a Membrane	25	259
Ohm's Law, A Necessary Modification of (Fernando Sanford)... ..	22	267
Opaque Bodies, Photography through (A. D'Arsonval)... ..	25	452
Optic (Electro-) Experiments (J. Elster and H. Geitel)... ..	25	260
Optical Phenomena, Magneto- (P. Drude)	22	148
—— ——— produced in an Electric Field due to the Variation of the Specific Inductive Capacity with the Field Strength (F. Pockels)	26	651
—— Telegraphs, Photometry of (C. Féry)	23	236
Orange, Electric Battery with (Trotter)	26	329
Ore, Magnetic Separation of Iron from	24	215
Organic Tissues, Experiments on Two Phenomena produced by the Passage of a Continuous Current through (G. Weiss)	26	321
Orlich, E., Polarisation Capacity of Mercury Electrodes	26	105
Oscillation of Two Pendulums, Comparing the Duration of (G. Lippmann)	26	180
—— ——— ——— ———, Comparison of the Duration of (G. Bigourdeu)	26	817

ABSTRACTS.

OSC—PEN 119

	VOL.	PAGE
Oscillations, Electric, in Wire Networks, Absorption and Distribution of (J. Klemencic)	23	96
——, Hertz, A Lecture Experiment with (L. Arons)	21	469
—— of Lightning Discharges and of the Aurora Borealis (J. Trowbridge)	23	93
Oscillograph, Abraham-Carpentier Induction- (H. Abraham)	26	451
Oscillographs, New Applications for (A. Blondel)	26	452
Osmond, F., Resistance of Irons and Steels	21	751
Otto, Marius, Ozone and Phosphoresence Phenomena	26	86
Oudin and Barthélemy, Crookes Tube for Use with Alternating-Current Dynamos	26	90
Output, Comparative, of the Direct, Alternating, and Polyphase Armature (H. George)... ..	21	533
Overhead Conductors for Electric Traction, Calculation of (W. Dierman)	24	99
—— Telephone Wires, Disturbances produced in, by Variable Currents in Neighbouring Conductors (Pierard)	24	223
—— Lines, Note on the Capacity of (E. Brylinski)	21	530
—— Trolley Wires on Bascule Bridges, The Connection of... ..	26	453
—— Wiring without Twist, The Theory of Inductionless (W. Christiani)	21	537
Oxygen, Permeability of (R. Hennig)	23	91
Ozone and Phosphoresence Phenomena (Marius Otto)... ..	26	86

P.

Pacific Cable	24	103
Paillot, R. and Edm. van Aubel, Comparison between Electrical and Thermal Conductivity of Alloys	25	602
Palmieri, L., Contribution to the Study of Earth Currents	24	388
Paris, Alternator of the "Secteur des Champs Elysées" (F. Guilbert)... ..	26	91
——, Distribution of Electrical Energy in (J. Laffargue)	24	651
——, Electric Tramway to Romainville (Jacquin)	25	594
——, "Le Secteur de la Rive Gauche" Electricity Supply in (J. Reyval)	25	342
Passavant, Contributions from the Experience of the Berlin Electricity Works	23	603
Pellat, H., Electrostatic Principles not founded on Coulomb's Laws: The Electric Force acting at Surface of Separation of Two Dielectrics	24	565
——, Measurement of the Force which acts on Fluid Unelectrified Dielectrics in Electric Fields	26	650
Pellissier, G., The Windmill as a Source of Power	21	465
Pendulum Movements, Apparatus for Registering Velocity of (J. and L. Lecarme)	26	319
Pendulums, Comparison of Duration of Oscillation of Two (G. Bigourdaeu)	26	1

	VOL.	PAGE
Pendulums, Method of Comparing the Duration of Oscillation of Two (G. Lippmann)	26	180
Permanent Magnetism, Some Phenomena in (P. Bachmetjew) ...	21	42
——— of Nickel and Steel (A. Abt)	21	753
——— Magnets, Effect of Local Heating on (C. Decharme)	21	348
Permeability, Apparatus for Measuring (Siemens Bros.)	21	756
——— of Iron and Nickel, Dependence on their Temperature (W. Kunz)	23	338
——— of Oxygen (R. Hennig)	23	91
Pérot, A., Dielectric Power of Ice	24	99
——— and Fabry, Absolute Electrometer for Measuring Small Differences of Potential	26	182
Perrigot, Black Light	26	637
———, Transparency of Ebonite	26	643
Perrin, A., Grassot Electricity Supply Meter for Continuous Currents	23	800
———, J., Discharge by Röntgen Rays: The Part played by the Surfaces acted upon	26	445
———, Discharges by means of Röntgen Rays: Influence of Temperature and Pressure	25	739
———, New Properties of Cathode Rays	25	249
———, Some Properties of the Röntgen Rays	25	242
Pettinelli, P., Whether Electrification is produced by the Vaporisation of various Conducting and very Fluid Liquids	25	458
Peukert, W., Influence of Rate of Discharge on Capacity of Lead Accumulators	26	652
Pfäum, H., On a Crookes Apparatus	25	455
Phase, Difference of, between Two Sinusoidal Currents, Measuring (A. Hess)	23	450
———, ———, Measure of (P. Clémentitch de Engelmeyer) ...	23	614
———, ———, produced by a Polariser carrying an Alternating Current (R. Malagoli)	26	782
——— Indicator for Synchronising, Alcock's	21	41
Phases, Exciting, for the Production of Rotary Magnetic Fields, Increasing the Number of (Dr. Behn-Eschenburg)	23	250
Phosphorescence, Effect of Low Temperatures on (Raoul Pictet) ...	23	801
——— of Sulphide of Strontium (J. R. Mourelot)	26	641, 642
——— Phenomena, Ozone and (Marius Otto)	26	86
———, Radiations emitted by (H. Becquerel)	25	339
Phosphorescent Anti-Anode System (C. Maltézos)	26	645
——— Bodies, Invisible Radiations emitted by (H. Becquerel) ...	25	451, 453
——— Sulphate of Zinc, Increase in Photographic Powers of Röntgen Rays by Use of (C. Henry)	25	335
Photographic Action of the x Rays, Law of (L. N. Vandevyver) ...	26	190
——— Dry Plates, Development of, by Electricity	22	365
——— Method of Representing a Magnetic Field (C. Thwing) ...	22	475
——— Power of Röntgen Rays, Increase in, by Use of Phosphorescent Sulphate of Zinc (C. Henry)	25	335
Photographically Representing the Infra-Red Spectrum, Simple Method of (K. Ångström)	25	243
Photography of Electric Radiations of the Sun and of its Atmosphere (P. de Heen)	26	444
——— through Opaque Bodies (A. D'Arsonval)	25	452

ABSTRACTS.

PHO—POL 121

	VOL.	PAGE
Photometric Standard, An Acetylene (J. Violle)	25	242
— Units (A. Blondel)	26	637
Photometry of Projectors, Lighthouses, and Optical Telegraphs (C. Féry)	23	236
Physical, Physiological, and Therapeutic Effects of Rapidly Inter- mittent Currents (Boisseau du Rocher)	26	191
Physikalisch-Technischen Reichsanstalt, Comparison of the B.A. Standard Resistances with those of the (St. Lindeck)	26	333
Physiological Action of a Galvanic Current at the Moment of Closing Circuit (Dubois)	26	784
— and other Troubles due to the α Rays (Destot)	26	646
— Effects of Rapidly Intermittent Currents (B. du Rocher)	26	191
Picou, R. V., Transmission of Power by Synchronous Alternating- Current Motors	24	377
Pictet, Raoul, Experimental Researches on the Effect of Low Temperatures on Phenomena of Phosphorescence	23	801
—, Influence of Low Temperatures on Attractive Power of Permanent Magnets	24	381
Pierard, Nature of the Disturbances produced in Overhead Telephone Wires by Variable Currents in neighbouring Conductors	24	223
—, Preventing the Noise due to Induction from Electric Traction in Single-Line Telephones	25	83
Piezo-electric Pile, On a (Lord Kelvin)	23	92
Pigments, Mineral, Electrolytic Preparation of	23	612
Pile, Piezo-electric (Lord Kelvin)	23	92
Piltchikoff, Emission of Röntgen Rays from a Tube containing a Fluorescent Substance	25	340
Pintsch and Gulcher Thermopile	21	41
Planets, Magnetism of (E. Leyst)	25	239
Plates, Accumulator, of the <i>Société de Construction Mécanique et</i> <i>Electrique du Nord</i>	23	461
—, —, Local Action in (Dr. M. Kugel)	21	349
Platinised Electrodes, and Measurement of Resistance (F. Kohlrausch)	26	329
Platinum Electrodes, Depolarisation of (Meyer and Klein)	26	330
— Group of Metals, Occlusion of Electrolytic Gases by (Cailletet and Colardeau)	24	105
— Thermometers, Construction of (H. L. Callender)	21	43
Ploughing, Electric, Brutschke and Shunpff System	25	87
Pockels, F., Optical Phenomena produced in an Electric Field due to the Variation of the Specific Inductive Capacity with the Field Strength	26	651
Poincaré, L., Class of Secondary Batteries	24	386
Points, Discharge from, produced by Currents of very High Frequency (K. Wesendonck)	25	258
—, Electrical Discharge from, Absolute Measurements of (J. Precht)	22	477
Polarisation Capacity of Mercury Electrodes (E. Orlich)	26	105
—, Magnetic Rotary, Becquerel's Formula (E. van Aubel)	26	98
—, Partial, of Luminous Radiations, in a Magnetic Field (Egoroff and Géorgiewsky)	26	640
— Phenomena in a Homogeneous Electrostatic Field (L. Lom- bardi and G. Ferraris)	25	457
Polarised Light from Magnetic Mirrors, Reflection of (J. A. Rosenqvist)	23	448

	VOL.	PAGE
Polariser carrying an Alternating Current, Difference of Phase produced by (R. Malagoli)	26	782
Polyphase and Continuous-Currents, Comparison between (Duez) ——— and Monophase Alternating-Current Systems, Comparative Cost of (H. Georges)	24	644
——— Currents (E. Gerard and G. Henrard)	24	561
——— ———, Apparatus for Objective Illustration of (A. von Wursterberger)	25	596
——— ———, Comparison between Monophase and (Georges)	26	459
——— ———, Distribution by (J. L. Routin)	24	559
——— ———, Electric Lighting and Transmission of Power by, in Works (P. Boucherot)	26	649
——— ———, Method for Calculating (A. Blondel)	24	215
——— ———, Transmission of Motive Power by, to the Jura-Simplon Workshops (C. Jacquin)	23	348
——— Motors (C. P. Steinmetz)	23	455
——— ———, Electrical Transmission by, at Romagnano (A. Nizzola)	23	249
Popow, N., Deposit of Carbon Particles on Interior of Incandescent Lamp Bulbs	26	647
Porous Bodies, Occlusion of Electrolytic Gases by (Cailletet and Colardeau)	26	183
Positive Electricity, Supposed Dispersion of, by Light (J. Elster and H. Geitel)	24	105
Potassium, Production of	25	256
Potential, Absolute Electrometer for Measuring Small Differences of (Perot and Fabry)	23	339
——— Differences, Measurement of very High (H. Abraham and J. Lemoine)	26	182
———, Electric, in a Conducting Liquid having a Uniform Motion (C. Gourré de Villemontée)	25	329
Potentials, Very High, Measurement of (A. Lemoine)	24	385
Power, Electrical Transmission of, to Genoa	24	641
——— in Glow Lamps (C. Feldmann)	21	534
———, Transmission of. (<i>See</i> Transmission.)	21	752
———, Windmill as a Source of (G. Pellisier)	21	465
Pressure and Current Curves of Alternators, and their Influence on Illuminating Power of Electric Arc (G. Rössler and W. Wedding)	23	787
———, Effects of, on Electric Accumulators (Cailletet and Colardeau)	24	105
———, Regulatio of, in Alternating-Current Systems of Electric Supply (E. Coen and A. Still)	25	563
Projectors, &c., Photometry of (C. Féry)	23	236
Propagation (Wave- Magnetism (J. Trowbridge)	21	467
Protecting Measuring Instruments against Terrestrial Vibrations, Device for (W. H. Julius)	25	96
Protection against Lightning (P. Hoho)	23	342
Puluj, Dr. J., Measurement of Coefficient of Self-Induction by Alternating Current and Dynamometer	21	46
Purification, Electrolytic, of Sugar Solutions (Anon)	23	460
Pyrrhotine, Magnetic Properties of (A. Abt)	25	260

Q.

	VOL.	PAGE
Quadrant Electrometer Needle, Damper for (Haga)	26	103
Quincke, G., Duration of the Electric Shadow in Solid and Liquid Insulating Substances	25	244
———, Rotations in Constant Electric Fields	26	328

R.

Rack Railway, Electric, on Mont Salève	23	607
Radiant Electric Energy, Measurements with (L. Zehnder)	24	91
Radiation Beams, Apparent Repulsion between Two Cathode (Wiedemann and Ebert)	21	531
———, Electric, Double Refraction of (K. Mack)	24	551
———, ———, of the Sun and of its Atmosphere, Photography of (P. de Heen)	26	444
Radiations, Electro-magnetic, Action of, on Films containing Metallic Powders (G. M. Minchin)	23	251
——— emitted by Bodies under the Influence of Light, Electric Properties of (G. Le Bon)	26	636
——— emitted by Phosphorescence (H. Becquerel)	25	339
———, Invisible, emitted by Phosphorescent Bodies (H. Becquerel)...	25	451, 453
———, Luminous, Partial Polarisation of, in a Magnetic Field (Egoroff and Géorgiewsky)	26	640
——— of Incandescent Bodies (J. Violle)	21	749
——— of the Spectrum, Properties of certain (G. Le Bon)	26	644
———, Passage of, from the Cathode through Metallic Films (H. Hertz)	21	345
——— produced by Bodies under the Influence of Light, Nature of different Kinds of (G. Le Bon)	26	454
Radiguet, Fluorescence of Vitriified Materials under the Action of the Röntgen Rays	26	181
Radiophony, Experiments on (E. Semmola)	23	350
Rail- and Tram-Ways, Electrical, Statistics of European, to January, 1894 (Anon.)	23	444
Railway, Electric, Calculations on the Maximum Speed for (J. Krämer)	21	755
——— Lines, Single, Protection of Trains on	23	450
——— Station, Electric Lighting of, at Munich (W. Klug)	25	100
———, Street-, Sessach-Gelterkinden (Dr. Densler)	21	42
———, Rack-, The (Electric), on Mont Salève	23	607
Raps, A., Registering Voltmeter	23	250
———, and A. Franke, On rendering Galvanometers of High Sensibility independent of External Magnetic Fields	26	459
Rarefied Gases, Electrostatic Rotation of (Ricardo Arno)	24	226
———, Separation and Striation of, by the Electric Discharge (I. C. C. Baly)	22	336

	VOL.	PAGE
Rayleigh, Lord, Minimum Current audible in the Telephone ...	24	92
Rays, Anode. (<i>See</i> Anode.)		
——, Cathode. (<i>See</i> Cathode.)		
——, contained in Sparks produced in Electric Discharges, New Kind of (E. Wiedemann) ...	25	253
——, Electric, Effect on Contact-Resistance of Two Conductors (V. von Lang) ...	25	255
——, Röntgen. (<i>See</i> Röntgen.)		
——, x . (<i>See</i> Röntgen.)		
——, Uranium. (<i>See</i> Uranium.)		
Reactions, Chemical, Study of, by means of Electricity (J. Garnier) ...	23	339
Refining of Silver and other Metals, Application of Electro-Metallurgy to the (C. Faunce) ...	25	85
Reflection of Light by a Long and Narrow Surface (Gouy) ...	26	645
—— of Polarised Light from Magnetic Mirrors (J. A. Rosenqvist) ...	23	448
—— of x Rays (F. W. Dvshauvers-Dery) ...	26	105
Refraction, Double, of Electric Radiation (K. Mack) ...	24	551
Refractive Index of Electric Waves in Alcohol (H. O. G. Ellinger) ...	22	266
Registering Voltmeter (A. Raps) ...	23	250
Regnoli Furnace for the Manufacture of Carbide of Calcium ...	26	780
Regulation of Pressure in Alternating-Current Systems of Electric Supply (E. W. Cowan and A. Still) ...	25	563
Regulator, Brake-, Electric (C. E. Guye) ...	26	94
Relation in Batteries between E.M.F. and Specific Heat, On the (Ascoli) ...	21	468
Repulsion, The Apparent, between Two Cathode Radiation Beams (Wiedeman and Ebert) ...	21	531
Residual Electricity, The Theories of (L. Houllevigue) ...	26	648
Resistance Coils, Use of Bare Wire for (F. W. Burstall) ...	25	725
——, Contact-, of Two Conductors, Change produced by Electric Rays on the (V. Von Lang) ...	25	255
——, Electrical, Absolute Measurement of (P. Himstedt) ...	24	553
——, ———, at the Contact of Two Metals (E. Branly) ...	24	639
——, ———, Determination of, by means of Alternating Currents (F. Kohlrausch) ...	22	621
——, ———, Measurement of, by means of Alternating Currents and the Telephone (R. Colson) ...	24	228
——, ———, of, with Platinised Electrodes (F. Kohlrausch) ...	26	329
——, ———, of a few New Alloys (Edm. Van Aubel) ...	24	383
——, ———, of Allotropic Silver (A. Oberbeck) ...	21	753
——, ———, of Bismuth to Variable Currents (A. Sadovsky) ...	24	571
——, ———, of Conductors to Alternating Currents (Mascart) ...	25	244
——, ———, of Dielectrics, Influence of Temperature on (R. Appleyard) ...	25	723
——, ———, of an Electric Spark (V. Biernacki) ...	25	82
——, ———, of Electrolytes, Some Forms of Electrodes for the Determination of (F. Kohlrausch) ...	23	445
——, ———, of Irons and Steels, (F. Osmond) ...	21	751
——, ———, of Metallic Wires, Influence of Vibration on (O. Murani) ...	26	103
——, ———, of Metals at Melting Point (G. Vassura) ...	23	105
——, ———, of Pure Copper Wire (Lagarde) ...	22	635
——, ———, of the Human Body, On the (M. von Frey) ...	22	148

	VOL.	PAGE
Resistance, Electrical, of Thin Metallic Films (E. Branly)	25	337
——, Inductive, in Closed Iron Circuits (C. P. Steinmetz)	25	604
—— Material, "Kruppin" (G. Dettmar)	23	95
——, Terminal, of a Small Conductor with very Large Ends (W. Shrader)	21	44
Resistances, Alloys for Standard (Dr. Feussner)... ..	21	466
——, High, used in connection with the D'Arsonval Galvanometer (F. J. Smith)	22	366
—— of Traction	24	220
——, Standard, Comparison of the B.A. with those of the Physikalisch-Technischen Reichsanstalt (St. Lindeck)	26	333
Resonator (Hertz's), A Detector for Spark in (Lucas and Garrett) ...	21	464
Resonators, Still, Mechanical Effects of Electrical Waves on (P. Lebedew)... ..	23	790
Respighi, Electric Tramways of Genoa	23	449
Reyval, J., Boiler Tests Made at Frankfort Exhibition... ..	24	382
——, Electric Lighting of the Kiel Canal	24	642
——, "Le Secteur de la Rive Gauche" Electricity Supply in Paris	25	342
Richard, G., Aluminium and its Electro-Metallurgy	22 , 633	23 456
Richter, C., Benardos System of Electric Welding	23	784
Righi, A., Absorption of Electro-magnetic Waves	26	785
——, Electric Phenomena produced by Röntgen Rays	25	341
——, Elongation of an Electric Spark produced by Motion of Electrodes... ..	25	346
——, New Experiments on the Globular Spark	25 450,	587
Righi Idiostatic Electrometer	24	385
Robert, P., A Lightning Flash in an Electric Central Station... ..	23	616
Rochas and Dariex, Cause of the Invisibility of the x Rays	25	340
Rocher, Boisseau du, Rapidly Intermittent Currents: Physical, Physiological, and Therapeutic Effects	26	191
Roever, F., Electric Endosmose of Tannic Acid Solutions through Hide Diaphragms	25	326
Rolling Mills, Electrically-Driven	25	460
Romagnano, Electrical Transmission by Polyphase Currents at (A. Nizzola)	26	647
Romainville, Electric Tramway from Paris (C. Jacquin)	25	594
Rome, Transmission of Electrical Energy (P. Marcillao)	23	106
——, Tivoli Station for the Electric Lighting of	22	151
Röntgen Phenomenon, The (A. Buguet)	25	734
—— Rays, Absorption of, by Gases and Vapours (E. Rutherford) ...	26	460
—— Rays, Action of, on the Diamond (A. Buguet and A. Gascard)	25	339
——, Action of, on Electrified Bodies (Benoist and Hurmuzescu)	25	591
——, Action of, on Electrostatic Charges, and on the Explosive Distance (Borgman and Gerchun)	25	341
——, Action of the, on the Explosive Discharge in Air (Sella and Majorana)	26	193
——, Action of, on the Nature of the Explosive Discharge in Air (Sella and Majorana)	26	194
——, Behaviour of the Halogens relatively to (E. Sehrwald)	26	199
——, Cause of the Invisibility of the (Dariex and Rochas)... ..	25	340
——, Charging of Objects by means of (G. Nannes)... ..	26	652
——, Chemical Action of (K. Zickler)... ..	25	608

	VOL.	PAGE
Röntgen Rays, Comparison of Absorption of, and of Luminous Rays by Crystallised Mediums (G. Agafonoff)	26	458
—, Diffraction of (D. Bungetziano)	25	585
—, Diffusion of (A. Imbert and H. Bertin-Sans)	25	453
—, Discharge by: The Part played by the Surfaces acted upon (J. Perrin)... ..	26	445
—, Discharges by means of: Influence of Temperature and Pressure (J. Perrin)	25	739
—, Discharge of Bodies by (Benoist and Hurmuzescu)	26	331
—, Discharging Electrified Conductors in Gases by (E. Villari)	25	733
—, Electric Phenomena produced by (A. Righi)	25	341
—, Electrified (A. Lafay)	25	593
—, Electrification of Gases exposed to, and Absorption of Röntgen Radiation ¹ by Gases and Vapours (E. Rutherford)... ..	26	460
—, Experiment showing that the, emanate from the Anode (de Heen)	25	240
—, Emission of, from a Tube containing a Fluorescent Substance (Piltchikoff)... ..	25	340
—, Experiments on (A. Nodon)	25	338
—, Fluorescence of Vitrified Materials under the Action of (Radiguet)	26	181
—, Generation of, Regulation of the Vacuum in Tubes for (B. Walter)	26	197
—, Increase in Photographic Power of, by Use of Phosphorescent Sulphate of Zinc (C. Henry)	25	335
—, Influence of the Chemical Nature of Bodies on their Transparency to (Meslans)	25	336
—, Influence of, on the Explosive Distance of the Electric Spark (Guggenheimer)	26	324
—, Law of Photographic Action of (L. N. Vandevyver)	26	190
—, Law of the Transparency of Gases to (L. Benoist)	26	180
—, Nature of (D. Goldhammer)	25	599
—, New Cathode Apparatus producing (Fouveau de Courmelles and G. Seguy)	26	457
—, Passage of, through Liquids (Bleunard and Labesse)	25	453
—, Physiological and other Troubles due to (Destot)	26	646
—, Pin-Hole Camera Pictures with (P. Czermak)... ..	26	463
—, Production of (Siemens and Halske)	25	328
—, Properties of the (J. Perrin)	25	242
—, Reflection of (F. W. Dwelshauvers-Dery)	26	105
—, Thermo-Luminescence provoked by (J. J. Borgmann)	26	458
—, Transparency of Bodies to (E. van Aubel)	26	96
—, Velocity, Measurement of Lower Limit of (Sella and Majorana)	26	192
Rosenqvist, J. A., Reflection of Polarised Light from Magnetic Mirrors	23	448
Ross, F., Central Stations	21	536
Rössler, G., and W. Wedding, Pressure and Current Curves of Alternators, and their Influence on Illuminating Power of Electric Arc	23	787
Rotary Field Machines, Theory of (P. Boucherot)	23	238

	VOL.	PAGE
Rotary Magnetic Field, Alternating, and its Application (R. Malagoli)	24	374
——— Fields, Increasing the Number of Exciting Phases for		
the Production of (Dr. Behn-Eschenburg)	23	250
——— Polarisation, Magnetic, Becquerel's Formula (E. van Aubel) ...	26	98
Rotating Air Pump (F. Schulze-Berge)	23	95
——— Electric Field, and Rotations produced by Electrostatic		
Hysteresis (R. Arno)	22	269
——— Field, An Attempt at a Simple Theory of Motors with		
(F. Géraldy)	21	45
——— Insulators, Damping Action of Magnetic Field on (W. Duane		
and W. Stewart)	26	778
Rotation, Electro-magnetic, A Phenomenon (Jüllig)	22	623
———, Electrostatic, of Rarefied Gases (R. Arno)	24	226
Rotations in Constant Electric Fields (G. Quincke)	26	328
Rouen, Electric Tramways of	25	584
Routin, J. L., Distribution by Polyphase Currents	26	649
Rutherford, E., Electrification of Gases exposed to Röntgen Rays,		
 and the Absorption of Röntgen Radiation by Gases and Vapours	26	460

S.

Sadovsky, A., Resistance of Bismuth to Variable Currents	24	571
Sahulka, J., Explanation of the Ferranti Phenomenon... ..	23	93
———, Measurement of the Capacity of Condensers with Alternating		
Currents	23	97
Safety Devices complying with the Regulations of the Verband		
 Deutscher Electrotechniker, Siemens & Halske's New System		
 of (Hundhausen)	26	198
St. Lindeck, Comparison of the B.A. Standard Resistances with those		
 of the Physikalisch-Technischen Reichsanstalt	26	333
St. Maur Observatory, Measurements of Earth Currents at (W. de		
 Fonvielle)	22	474
St. Ouen, Generating Station of (F. Guilbert)	26	187
Salève, Mont-, The Electric Rack-Railway on	23	607
Sanford, Fernando, A Necessary Modification of Ohm's Law	22	267
Sartiaux, E., Electric Lighting of Trains on the Chemin de Fer		
 du Nord	26	732
Schiséophone, The (Captain de Place)	21	749
Schmidt and Ebeling. (See Ebeling.)		
Schröder, L., Electric Tramway Systems with Stationary Accumu-		
 lators	26	108
Schuckert & Co., Central Stations of : Aix-la-Chapelle (F. Uppenborn)	23	441
———, ———, Altona (F. Uppenborn)	22	624
———, ———, Düsseldorf (F. Uppenborn)	22	469
———, ———, Hanover (F. Uppenborn)	22	363
Schulz, E., Two-Pole compared with Multipolar Dynamos	22	157
———, Direct-Current Power Transmission by Series Machines	23	442
Schulze-Berge, F., Rotating Air Pump	23	8

	VOL.	PAGE
Screening (Electro-dynamic) and Electric Shadows, Experiments on (H. Ebert and E. Wiedemann)	22	620
"Secteur des Champs Elysées," New Alternator of the (F. Guilbert)...	26	91
Séguy, C., Crookes Tube of Spherical Form, showing the Reflection of Cathode Rays by Glass and Metal... ..	25	246
—— and Fouveau de Courmelles New Cathode Apparatus producing x Rays	26	457
Sehrwald, E., Behaviour of the Halogens relatively to Röntgen Rays	26	199
Seiler and Kleiner. (See Kleiner.)		
Self-Induction, Effects of (W. de Nikolaieff)	25	80
——, Measurement of Coefficient of, by Alternating Current and Dynamometer (Dr. J. Puluj)	21	46
—— of a Circuit, Apparatus for Varying (Max Wein)	25	459
—— of a Coil, Tesla's Method of Compensating for	23	350
—— of Various Telephones, Measurements of Coefficient of (Strecker and Billig)	21	532
—— of Wires, Coefficient of (C. E. Guye)	23	807
Sella and Majorana, Action of the Röntgen Rays and Ultra-Violet Light on the Explosive Discharge in Air	26	193, 194
—— ———, Experiments on Röntgen Rays, and Measurement of Lower Limit of their Velocity... ..	26	192
Semmola, E., Experiments on Radiophony	23	350
Sensibility of the Deprez Galvanometer, To Increase the (Classen)	25	603
Sensitiveness of the Movable-Coil Galvanometer (A. Abraham)	25	592
Series Machines, Direct-Current Power Transmission by (E. Schultze)	23	442
Sessach-Gelterkinden Street Railway, The (Dr. Densler)	21	42
Shadow, Electric, Duration of the, in Solid and Liquid Insulating Substances (G. Quincke)	25	244
Shadows, Electric, Experiments on (H. Ebert and E. Weidemann)	22	620
Shrader, W., Terminal Resistance of a Small Conductor with very Large End	21	44
Shunpff-Brutschke System of Electric Ploughing	25	87
Siemens & Halske, Central Stations of: Copenhagen (F. Uppenborn)	23	248
—— ———, Central Stations of: Stockholm (F. Uppenborn)	23	443
—— ———, Controlling Apparatus for Lifts (H. Langer)	25	103
—— ———, Coulombmeter	21	531
—— ———, New System of Installation Fittings and Safety Devices complying with the Regulations of the Verband Deutscher Electrotechniker (Hundhausen)	26	198
—— ———, Production of Röntgen Rays	25	328
—— Bros., Apparatus for Measuring Permeability	21	756
Signals, War-, Electric (P. Marcillac)	24	384
Silent Discharge, Chemical Syntheses by means of the (Losanitsch and Jovitschitsch)	26	780
Silicon-Copper Alloy (Vigouroux)	25	345
——, Preparation of, in the Electric Furnace (H. Moissan)	26	185
Silver, Electrolytic Separation from Lead (D. Tommasi)	26	334
——, Electro-, Refining of (C. Faunce)	25	85
——, Resistance of Allotropic (A. Oberbeck)	21	753
Single- and Polyphase Alternating Current Systems, Comparative Cost of (H. Georges)	24	561
———Phase Motors, Experiments on Non-Synchronous (A. Banti)	23	241

	VOL.	PAGE
Sinusoidal Currents, Measuring Difference of Phase between Two (A. Hess)...	23	450
Skin, Sensitiveness of, Method of Measuring Electric Capacities, based on the (H. Bordier) ...	24	648
Skinner, S., The Clark Cell when Producing a Current ...	24	95
Slavianoff Electric Casting Process (A. Lohmann) ...	24	557
Smith, F. J., High Resistances used in connection with the D'Arsonval Galvanometer ...	22	366
Sodium in Electrolytic Aluminium (H. Moissan) ...	25	87
——, Production of ...	23	339
Soldering Accumulator Electrodes (Strecker and Karrass) ...	26	105
——, Electric, Zerener Process ...	25	254
Solution, Conductivity of, Alteration, by Addition of Small Quantities of a Non-Conductor (R. J. Holland) ...	23	94
——, Electrolytic, of Carbon (A. Coehn) ...	26	103
——, ———, ——— (F. Vogel) ...	26	103
Spark Effect, Hertz, made Apparent to an Audience (L. Zehnder) ...	22	148
——, Discharge produced by (Swyngedauw) ...	26	449
——, Electric, Elongation of, produced by Motion of Electrodes (A. Righi) ...	25	346
——, ———, Resistance of (V. Biernacki) ...	25	82
——, ———, Influence of Röntgen Rays on the Explosive Distance of (Guggenheimer) ...	26	324
——, Globular, New Experiments on the (A. Righi)...	25	450, 587
—— in Hertz's Resonator, Detector for (Lucas and Garrett) ...	21	464
Sparks, Electric, Discharging Electrified Conductors in Gases by (E. Villari) ...	25	733
——, ———, Discharging of Electrified Bodies in Gases by (Ed. Branly) ...	25	735
—— produced in Electric Discharges, New Kind of Rays contained in (E. Wiedemann) ...	25	253
Specific Heat, Relation in Batteries between E.M.F. and (Ascoli) ...	21	468
Specific Inductive Capacities of Solid Bodies, Measuring the (H. Starke) ...	26	461
—— Capacity of Glass (F. Beaulard) ...	23	809
——, Gordon-Winkelmann Method of Measuring (E. Cohn) ...	21	534
——, ———, New Method of Determining (A. Elsas) ...	21	351
——, ———, of Liquids, New Method of Measuring the (F. Heerwagen) ...	22	265
——, ———, Optical Phenomena produced in an Electric Field due to Variation of, with the Field Strength (F. Pockels) ...	26	651
——, ———, Power of Glass (F. Beaulard) ...	25	81
Spectrum Analysis of Carbons of Electric Furnace (H. Deslandres) ...	24	646
——, Infra-Red, Photographically Representing the (K. Ångström) ...	25	243
—— of Argon and of the Aurora Borealis (D. Berthelot) ...	24	566
——, Properties of certain Radiations of the (G. Le Bon) ...	26	644
Speed for an Electric Railway, Calculations on the Maximum (J. Krämer) ...	21	755
Squier and Crehore. (See Crehore.)		
Standard Cell, Cadmium (Jaeger and Wachsmuth) ...	25	726
—— Resistances, of the B.A. and Physikalisch-Technischen Reichsanstalt compared (St. Lindeck) ...	26	333

	VOL.	PAGE
Standard Resistances, Alloys for (Dr. Feussner)	21	466
Starke, H., Measuring Specific Inductive Capacities of Solid Bodies	26	461
Starting Gas Engines, Automatic Apparatus for	23	347
Stations, Central. (<i>See</i> Central Stations.)		
Steel, Experiments on various Methods of Magnetising (C. Decharme)	21	348
———, Permanent Magnetism of Nickel and (A. Abt)	21	753
———, Magnetisation of, by Small Magnetic Forces (L. Holborn) ...	26	777
———, Temperatures of Transformation of (G. Charpy)	24	96
Steels, The Resistance of Irons and (F. Osmond)	21	751
Steering Gear, Electric, of the Union Electricitäts-Gesellschaft ...	26	327
Steinmetz, C. P., Law of Hysteresis, and Theory of Inductive Resistance in Closed Iron Circuits	25	604
———, ———, Law of Magnetic Hysteresis, and Allied Phenomena	22	153
———, ———, Polyphase Motors	23	249
———, ———, Remarks on the Magnetic Circuit	21	537
———, Coefficients of Magnetic Hysteresis (Ebeling and Schmidt) ...	26	653
———, Monocyclic System of Distribution (E. Boistel)	24	649
Stenger, F., The Back E.M.F. of the Arc... ..	21	347
Stewart, W. and W. Duane, Damping Action of Magnetic Field on Rotating Insulators	26	778
Still, A., and E. W. Cowan. (<i>See</i> Cowan.)		
Stockholm, Central Station (F. Uppenborn)	23	443
Strain, Mechanical, Magnetisation of Nickel under (H. Banti) ...	22	149
Strecker, K., The Protection of Telephone Lines against Induction ...	21	46
——— and Billig, Measurements of Coefficient of Self-Induction of various Telephones	21	532
——— and Karrass, Soldering Accumulator Electrodes	26	105
Street Railway, The Sessach-Gelterkinden (Densler)	21	42
Stress, Electro-magnetic (E. Taylor-Jones)	24	555
Stresses, Tensional and Compressive, Influence of, on the Thermo-electric and Magnetic Properties of the Metals (G. S. Meyer) ...	25	726
Stroud, W., and J. B. Henderson, Measuring Electrolytic Conductivity by means of Continuous Currents	26	195
Sub-Stations, Accumulator, in Electric Lighting (Hermann Müller)...	22	150
Sugar Solutions, Purification by Electrolysis	23	460
Sulphide of Strontium, Method of Obtaining, in very Phosphorescent Condition (J. R. Mourelle)	26	641
———, Phosphorescence of (J. R. Mourelle)	26	642
Sulphuric Acid, Electrical Conductivity of Concentrated (K. E. Guthe and L. J. Bangs)	25	603
———, Dilute, Electro-capillary Properties of (Couy)	25	84
Sumpner, W. E., The Diffusion of Light... ..	22	268
Sun, Electric Radiations of, Photographed	26	444
Supply Meter, Grassot, for Continuous Currents (A. Perrin)	23	800
Surface Conductivity of Glass, Absolute Measurements of (A. Krummenacker)	25	601
——— of Separation of Two Dielectrics, The Electric Force acting at (H. Pellat)	24	565
Sussmann Electric Miner's Lamp	26	454
Swinton, A. A. Campbell, Experiments with High-Frequency Electric Discharges	22	264
Swyngedauw, H., Difference in the Action of Ultra-Violet Light on Static and Dynamic Explosive Potentials	25	246

	VOL.	PAGE
Swyndegauw, H., Discharge produced by a Spark, and the Working of the Hertz Exciter	26	449
——— Effect of the Condition of the Polar Surfaces of an Exciter on the Static and Dynamic Explosive Potentials	26	89
Swiss Electrical Installations: Berne and Wynau Central Stations (J. Blondin)	26	179
——— National Exhibition, Electricity at (C. E. Guye)	26	93
Synchroniser, Lahmeyer	23	340
Synchronising, Alcock's Phase-Indicator for	21	41
Synchronous and Non-Synchronous Alternating-Current Motors (P. Boucherot)	25	237
——— Motors, Some Characteristics of (E. Kolben)	25	101
Szapiro, B., Use of Voltmeters in Alternate-Current Stations	23	92

T.

Tannic Acid Solutions, Electric Endosmose of, through Hide Diaphragms (F. Roever)	25	326
Taylor-Jones, E., Electric-magnetic Stress	24	555
Teichmüller, J., Specific Conductivity of Copper	23	795
Telegraph Wires, Bronze (E. Buels)	21	755
Telegraphic Apparatus, Fusible Wires for Protecting	23	461
——— Cable attacked by Termites (E. L. Bouvier)	25	738
Telegraphists, The Equation of (Le Roux)	26	186
Telegraphs (Optical), Photometry of (C. Féry)	23	236
Telephone, A Nickel Stress (T. A. Garrett and W. Lucas)	26	776
——— Lines, Protection of, against Induction (K. Strecker)	21	466
——— Minimum Current audible in the (Lord Rayleigh)	24	92
———, Use of, in Measurement of Resistance by means of Alternating Currents (R. Colson)	24	228
——— Wires, Overcoming Induction of (Dolivo-Dobrowolski)	21	537
———, Overhead, Disturbances produced in, by Variable Currents in Neighbouring Conductors (Pierard)	24	223
Telephones, Measurements of Coefficient of Self-Induction of various (Strecker and Billig)	21	532
———, Single-Line, Preventing Noise due to Induction from Electric Traction in (Pierard)	25	83
Telephonic Cables with Dry-Air Circulation (A. Barbaret)	23	804
Telephony, Long-Distance (F. Gerdaldy)	22	367
Temperature Coefficient of Copper-Zinc Alloys (R. Haas)	23	791
——— of Mercury (C. E. Guillaume)	22	271
———, Dependence of Magnetic Hysteresis, Permeability, and the Electrical Conductivity of Iron and Nickel on their (W. Kunz)	23	338
———, Effect of, on Hysteresis (W. Kunz)	21	532
———, Influence of, on Resistance and Inductive Capacity of Dielectrics (R. Appleyard)	25	723
——— of the Electric Arc, The (J. Violle)	24	222

	VOL.	PAGE
Temperature of Incandescent Lamps, Measuring the (P. Janet) ...	25	735
——, Relation of Magnetic Hysteresis to (W. Kunz)... ..	23	600
——, Variations of, of a Conductor carrying Alternating Currents (C. E. Guye)	26	450
Temperatures, Low, Effect of, on Phosphorescence (Raoul Pictet) ...	23	801
——, ——, Influence of, on Attractive Power of Permanent Magnets (R. Pictet)	24	381
——, New Method of Measuring (D. Berthelot)	24	569
Tempering, Transformation of Iron and of Carbon with respect to (Georges Charpy)	23	802
Tension, Effect of, on the Dielectric Constants of an Insulator (O. M. Corbino)	26	333
Tensional and Compressive Stresses, Influence of, on the Thermo- electric and Magnetic Properties of the Metals (G. S. Meyer) ...	25	726
Terminal Resistance of a Small Conductor with very Large Ends (W. Shrader)	21	44
Termites, A Telegraphic Cable attacked by (E. L. Bouvier)	25	738
Tesla Experiments, Electric Condenser Oscillations produced with Multiple-Plate Influence Machines, and their Use in (Topler) ...	25	258
—— Currents, Experiments with (F. Himstedt)	23	787
Tesla's Method of Compensating for Self-Induction of a Coil... ..	23	350
Therapeutic Action of Electric Currents of High Frequency (A. De Berlioz)	24	387
—— Effects of Rapidly Intermittent Currents (B. du Rocher) ...	26	191
Thermal Conductivity, Comparison with Electric Conductivity of Alloys (Edm. van Aubel and R. Paillot)	25	602
Thermo-Chemical Carbon Cell (Desiré Korda)	24	387
—— -Electric Properties of the Metals, Influence of Tensional and Compressive Stresses on the (G. S. Meyer)	25	726
—— ——— Generator (G. Meyer)	25	329
—— -Luminescence provoked by Röntgen Rays and Becquerel Rays (J. J. Borgmann)	26	458
Thermometers, Construction of Platinum (H. L. Callender)	21	43
Thermopile, Gulcher and Pintsch... ..	21	41
Thofehrn Electrolytic Bath... ..	24	566
Thomas, L., Constitution of the Electric Arc	23	810
Thompson, S. P., and Miles Walker, Mirrors of Magnetism	24	552
——, ——, Winding of Alternate-Current Electro-Magnets ...	23	784
Thomson, J. J., Discharge of Electricity through Exhausted Tubes- without Electrodes	21	352
——, Velocity of Cathode Rays	24	90
Three-Phase Tramway of Lugano... ..	25	344
Three-Wire System, Middle Conductor in (E. Lohr)	25	97
Thwing, C., A Photographic Method of Representing a Magnetic Field	22	475
Thunderstorms, Formation of, (W. Bezold)	25	259
Tivoli-Rome Transmission of Electrical Energy (P. Marcillac) ...	23	106
—— Station for the Electric Lighting of Rome, The	22	151
Tomasina, T., The Electric Tramways of Geneva	24	225
Tommasi, D., Electrolytic Process of Desilverising Lead	26	334
——, Multitubular Electric Accumulators	22	367
Topler, Electric Condenser Oscillations produced with Multiple-Plate Influence Machines, and their Use in Tesla Experiments... ..	25	258
Torsion, Elasticity of, of an Oscillating Wire (Berson and Bonasse) ...	23	798

	VOL.	PAGE
Toxines, Bacteriological, Action of High-Frequency Currents on (D'Arsonval and Charrin)	25	334
Traction, Electric, Apparatus of the Fives-Lille Co. (Paul Girault) ..	25	736
——, ———, Calculation of Overhead Conductors for, (W. Dierman)	24	99
——, ———, Combined Use of Accumulators and Trolley (D. Korda).....	26	325
——, ———, in Hamburg	25	94
——, ———, of Boats on the Burgundy Canal	26	184
——, ———, Preventing Noise due to Induction from, in Single-Line Telephones	25	83
——, ———, The Resistances of	24	220
Train-Lighting, Electric (J. Dery and L. Weissenbruch)	23	235
Trains, Electric Lighting of, on the Chemin de Fer du Nord (E. Sartiaux)	26	782
Tramways, Electric, Aix-la-Chapelle	25	254
——, ———, Bourdeaux-Bouscat to Vigeon (A. Hess)	23	341
——, ———, Buda-Pesth (A. Moutier)	26	322, 326
——, ———, Enghien-St. Gratien-Montmorency (E. Dieudonné) ...	26	781
——, ———, Geneva (T. Tomasina)	24	225
——, ———, Genoa (Respighi)	23	449
——, ———, Gesundbrunnen-Pankow	25	99
——, ———, Hutin and Leblanc System	25	87
——, ———, Importance of Complete Metallic Circuits for (J. M. Vail)	23	459
——, ———, Lugano (Three Phase)	25	344
——, ———, Lyons—Claret-Vuilleumier System (Vuilleumier) ...	24	218
——, ———, Paris, from "La Place de la Republique" to Romainville (C. Jacquin)	25	594
——, ———, Rouen	25	584
——, ———, Statistics of European, to January, 1894	23	444
——, ———, Systems with Stationary Accumulators (Schröder) ...	26	108
Transformer (Direct to Alternating) (F. Lucas)	22	269
—— for Converting Monophase into Triphase Currents (Desiré Korda)	23	799
——, ———, Efficiency of (Dolivo-Dobrowolski)	21	535
Transmission of Electrical Energy by Direct-Current (E. Schultz) ...	23	442
——, ———, Electrical, by Polyphase Currents, (J. L. Routin)	26	649
——, ———, ——— at Romagnano (A. Nizzola)	26	647
——, ———, ——— in Works (P. Boucherot)	24	215
——, ———, ——— to the Jura-Simplon Workshops (C. Jacquin)	23	455
——, ———, by Synchronous Alternating-Current Motors (R. V. Picou)	24	377
——, ———, Chevres-Geneva (C. E. Guye)	25	252
——, ———, Genoa	21	534
——, ———, Lauffen-Frankfort (F. Uppenborn)	22	150
——, ———, Lauffen to Frankfort	23	616
——, ———, Lauffen-Heilbronn	22	262
——, ———, of Power at Menier's Factory at Noisiel (P. Boucherot)	23	619
——, ———, in the Mines of the Bleiberger Bergwerks-Union, Carinthia	25	380
——, ———, Tivoli-Rome (P. Marcillac)	23	106
Transparence of Bodies to α Rays (E. van Aubel)	26	88

	VOL.	PAGE
Transparence of Ebonite (Perrigot)	26	643
—— of Gases to x Rays, Law of (L. Benoist)... ..	26	180
—— to Röntgen Rays, Influence of the Chemical Nature of Bodies on their (Meslans)	25	336
Travelling Crane, Electric (C. E. Guye)	26	94
Trolley Systems of the Buda-Pesth Tramways (A. Moutier)	26	326
——, Combined Use of Accumulators and of (Désiré Korda)	26	325
—— Wires, Connection of Overhead, on Bascule Bridges	26	453
Trotter, Electric Battery with an Orange	26	329
Trowbridge, J., Oscillations of Lightning Discharges and of the Aurora Borealis... ..	23	93
——, J., Wave Propagation of Magnetism	21	467
Tube, Crookes. (<i>See</i> Crookes.)		
Tuma, J., Measurements with Alternate Currents of High Frequency	25	607
Tungsten, Method of Obtaining, by Electricity (Krieg)	23	236
——, Reduction of, in Electric Furnace (E. Defacqz)	26	99
Tuning Fork, Vibrations of, in a Magnetic Field (Maurain)	24	645
Twist (Magnetic-) Cycles, Magnetic Elongation and (C. G. Knott)	23	247
Two-Pole Compared with Multipolar Dynamos (E. Schulz)	22	157

U.

Umbreit and Mathes, Cupron Cell	26	108
Underground Conduit Systems of the Buda-Pesth Tramways (A. Moutier)	26	236
Unipolar Induction (E. Lecher)	23, 796	24 553
Unit of Light, Bolometric Researches on (Lummer and Kurlbaum)	23	794
United States, Electrical Industry in the (E. J. Brunswick)	23	343
Units, Electrostatic and Electro-magnetic, Determination of the Ratio v between (D. Hurmuzescu)	25	89
——, Photometric (A. Blondel)	26	637
Uppenborn, F., The Central Station of Aix-la-Chapelle	23	441
——, ——, —— Altona	22	624
——, ——, —— Barmen	22	263
——, ——, —— Copenhagen	23	248
——, ——, —— Düsseldorf	22	469
——, ——, —— Hanover	22	363
——, ——, —— Stockholm	23	443
——, ——, The Königsberg Electricity Works	22	625
——, ——, The Lauffen-Frankfort Transmission	22	150
Uranium Carbide, Study of (Henri Moissan)	25	345
——, Electrified, Law of Discharge in Air (H. Becquerel)	26	456
—— Rays, Properties of (H. Becquerel)	25	740
——, ——, Researches on the (H. Becquerel)	26	446
Usener, H., Generation of Electricity by Fluid Currents	25	457
Utilisation of Small Waterfalls, The (F. Chédeville)	22	631

V.

	VOL.	PAGE
"v," New Determination of (H. Abraham)	21	750
Vacua, High, Cathode Rays in (P. Lenard)	23	335
—— of Glow Lamps, Comparison of (C. Boccali)	21	532
Vacuum, Regulation of, in Tubes for the Generation of Röntgen Rays (B. Walter)	26	197
—— Tubes, Some Phenomena in (C. Maltézos)	26	643
Vail, J. M., Importance of Complete Metallic Circuits for Electric Tramways	23	459
Vallorbes, Water-Power Installation at (A. Boucher)	21	350
Vandevyver, L. N., Law of Photographic Action of x Rays	26	190
Vaporisation of a Liquid, Influence of Electrical Condition of a Liquid Surface on the Heat of (Emile Fontaine)	26	189
—— of various Conducting and very Fluid Liquids, Whether Electrification is produced by the (P. Pettinelli)	25	458
Variations of Energy, A Study of (Vaschy)	26	320
Vaschy, A Study of Variations of Energy	26	320
——, On some Errors admitted as Truths in Electro-Magnetism	26	88
Vassura, G., Electrical Resistance of Metals at Melting Point... ..	23	105
Velocity of Cathode Rays (J. J. Thomson)	24	90
—— of Röntgen Rays, Lower Limit of (Sella and Majorana)	26	192
—— of Pendulum Movements, Registering (J. and L. Lecarme)	26	319
Vibration-Galvanometer, Measurements of Coefficients of Induction by means of (G. Granquist)	26	330
——, Influence of, on Electric Resistance of Metallic Wires (O. Murani)	26	103
Vibrations of a Tuning-Fork in a Magnetic Field (Maurain)	24	645
——, Terrestrial, Protecting Measuring Instruments against (W. H. Julius)	25	96
Vielle and Berthelot, Explosive Properties of Acetylene	25	730
Vigean, Electric Tramway from Bourdeaux-Bouscat to (A. Hess)	23	341
Vigouroux, Silicon-Copper Alloy	25	345
Villari, E., Action of the Electric Discharge on the Property possessed by Gases of Discharging Electrified Bodies... ..	25	733
——, Properties possessed by x Rays and Electric Sparks of Discharging Electrified Conductors in Gases	25	738
Villari Critical Point in Nickel (A. Heydweiller)... ..	23	789
Violle, J., An Acetylene Photometric Standard	25	242
——, The Radiation of Incandescent Bodies	21	749
——, Temperature of the Electric Arc	24	223
Vitrified Materials, Fluorescence of, under the Action of the Röntgen Rays (Radiguet)... ..	26	181
Vogel, F., Notes on the Electrolytic Solution of Carbon	26	103
——, Recent Advances in the Manufacture of Accumulators	26	106
Voller, Demonstration and Investigation of Electric Waves	23	447
Voltmeter, Registering (A. Raps)	23	250
Voltmeters in Alternate-Current Stations, Use of (B. Szapiro)	23	92
Vortmann, G., Electrolytic Determination of the Halogens	25	458
Vuilleumier-Claret, Electric Tramways	25	594
——, Electric Tramway, Lyons (Claret-Vuilleumier System)	24	218

W.

	VOL.	PAGE
Wachsmuth, R., and W. Jaeger, Weston Standard Cadmium Cell	24, 96; 25,	726
Walker, Miles, and S. P. Thompson, Mirrors of Magnetism	24	552
———, ———, ———, Winding of Alternate-Current Electro-		
Magnets	23	784
Walter, B., Regulation of Vacuum in Tubes for Generation of		
Rontgen Rays	26	197
War Signals, Electric (P. Marcillao)	24	384
Water, Pure (F. Kohlrausch and A. Heydweiller)	23	786
Waterfalls, Utilisation of Small (F. Chédeville)... ..	22	631
Water-Power Installation at Vallorbes, The (A. Boucher)	21	350
———, The Embrun (J. P. Anney)	21	467
——— Station at Dover, U.S.A.	21	41
Wattmeter, Differential, for Use with Alternate Currents (A. E.		
Kennelly)	22	367
Wave Propagation of Magnetism (J. Trowbridge)	21	467
——— Trains, Electric, Passage through Layers of Electrolyte		
(G. U. Yule)	23	98
Waves, Electric, in Alcohol, Refractive Index of (H. O. G. Ellinger)... ..	22	266
———, Demonstration and Investigation of Electric (Voller)	23	447
———, Electrical, Mechanical Effects of, on Still Resonators (P.		
Lebedew)	23	790
———, Electro-magnetic, Absorption of (A. Righi)	26	785
———, Propagation of, in Ice (R. Blondlot)	24	98
Wedding, W., and G. Rössler, Pressure and Current Curves of		
Alternators, and their Influence on Illuminating Power of		
Electric Arc	23	787
Weihe, F. A., Heat Generated in Iron in Alternating Magnetic Fields		
by reason of Hysteresis	26	779
Wein, Max, Apparatus for Varying the Self-Induction of a Circuit	25	459
Weiss, G., Experiments on Phenomena produced by the Passage of a		
Continuous Current through Organic Tissues	26	321
———, A very Sensitive Galvanometer	24	568
Weiss, P., Use of Ballistic Galvanometer when the Transient Current		
is not of Short Duration	25	330
Weissenbruch, L., and J. Dery, Electric Train-Lighting	23	235
Welding, Electric, Benardos System of (C. Richter)	23	784
———, ———, Zerener Process	25	254
Wesendonck, K., The Discharge from Points produced by very High		
Frequency Alternating Currents	25	258
Weston Standard Cadmium Cell (Jaeger and Wachsmuth)	24	96
Weyher & Richemond's Works, Electric Lighting and Transmission		
of Power by Polyphase Currents in (P. Boucherot)	24	215
Wheatstone's Bridge, Discussion on the Currents in the Branches of		
(Crehore and Squier). (See Crehore)	26	331
———, Influence of Electrostatic Capacity of Coils on the		
Measurement of Coefficients of Induction by (J. Cauro)	24	378
Wiedemann, E., New Kind of Rays contained in Sparks produced in		
Electric Discharges	25	253
——— and Ebert, The Apparent Repulsion between Two Cathode		
Radiation Beams	21	531

ABSTRACTS.

WIE—ZEH 137

	VOL.	PAGE
Wiedemann and Ebert, Experiments on Electro-dynamic Screening and Electric Shadows	22	620
Wien, A New Form of Induction Balance	22	620
Wietlisbach, Dr. von, Action of Strong on Weak Current Circuits ...	21	535
Wilkens, K., Method of Calibrating Measuring Instruments for Alternating and Polyphase Currents employed by the Allgemeine Electricitäts-Gesellschaft	26	334
Winding of Alternate-Current Electro-Magnets (Thompson and Walker)	23	784
Windmill as a Source of Power (G. Pellissier)	21	465
Wire, Bare, Use of; for Resistance Coils (F. W. Burstall)	25	725
—— Networks, Absorption and Distribution of Electric Oscillations in (J. Klemencie)	23	96
——, Oscillating, Elasticity of Torsion of (Berson and Bonasse) ...	23	798
Wires, Bare, Heating of (Cardani)... ..	21	754
——, Bronze, for Telegraph Purposes (E. Buels)	21	755
——, Electrical Resistance of, Influence of Vibration on (O. Murani)	26	103
——, Fusible, for Protecting Telegraphic Apparatus	23	461
——, Parallel and Equi-Distant, Coefficient of Self-Induction of (C. E. Guye)	23	807
——, Pure Copper, Electrical Resistance of (Lagarde)	22	635
——, Metallic, Fusion of, by Continuous Currents or by the Discharge of a Battery (Maurain)	25	240
——, Overhead, Telephone-, Disturbances produced in, by Variable Currents in Neighbouring Conductors (Pierard)	24	223
——, Telephone, Overcoming Induction of (Dolivo-Dobrowolski ...	21	537
Wiring without Twist, The Theory of Inductionless Overhead (W. Christiani)	21	537
Wolfram, Reduction of, by Carbon, in the Electric Furnace (E. Defacqz)	26	99
Woodward and Downes, System of Lead Fuses	26	786
Works, Isar (A. von Millar)... ..	25	96
——, Lighting and Power-Transmission by Polyphase Currents in (P. Boucherot)	24	215
Wurstemberger, A. von, Apparatus for the Objective Illustration of Polyphase Currents	26	459
Wynau Central Station (J. Blondin)	26	179

Y.

Yule, G. U., Passage of Electric Wave-Trains through Layers of Electrolyte	23	98
---	-----------	----

Z.

Zeeman, P., Influence of Magnetism on the Nature of the Light emitted by a Substance... ..	26	332
Zehnder, L., Making the Hertz Spark Effect Apparent to an Audience	22	148

	VOL.	PAGE
Zehnder, L., Management of High-Voltage Accumulators	26	96
———, Measurements with Radiant Electric Energy	24	91
Zerener Electric Casting, Welding, and Soldering Process	25	254
Zickler, K., Chemical Action of the Röntgen Rays	25	608
Zinc Electrodes for Galvanic Batteries, Preparation of... ..	22	471
——— Ore, Magnetic Separation of Iron from—Ferrares Process ...	24	215
———, Phosphorescent Sulphate of, Increase in Photographic Power of Röntgen Rays by Use of (C. Henry)	25	335
Zürich, Use of Accumulators with the Alternate-Current Supply at ...	25	331

